THE MANKIND QUARTERLY

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Apollo the Wolf-god

Daniel E. Gershenson

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THE TYRANNY OF THE MYTH: DOÑA MARINA AND THE CHICANO SEARCH FOR ETHNIC IDENTITY

Oleg Zinam and Ida Molina
University of Cincinnati

Doña Marina is one of the most controversial female figures in history. Judging by objective standards based on an evaluation of the totality of her situation, her behavior and the outcome of her actions, she could be considered both a heroine and a traitoress. Some see her as a heroic woman, who despite great sufferings and deprivations inflicted on her by her own mother, who sold her into slavery, a Maya chieftain who made a gift of her to Cortés and others, remained strongly committed to a cause she considered just. Unfortunately, the majority of Chicanos, like most Mexicans, view her as a turncoat who betrayed her own nation and assisted Spanish invaders in their conquest of the Aztec empire.

Though Marina's period of influence on events in "New Spain" was relatively short-lived, her overall impact on events and subsequent historical development was great. Especially important and significant was the vitality of her imprint on the minds of those Mexicans and Chicanos who are deeply concerned with the search for their own national and ethnic identity. The difficulties in assessing her role within the historical events that took place during the conquest of Mexico are greatly accentuated by a feeling of humiliation and inadequacy of those Chicanos who believe that their nation was subjected to a "double rape": first by the Spaniards in the early sixteenth century and then by "Anglos" in the middle of the nineteenth century. They seek a solid foundation for their national pride in the past glory of the Aztec empire and such noble symbols as Atzlán and La Raza. Against this background it is extremely difficult for them to see Doña Marina as she really was. It seems to be much easier to brand her "La Chingada" (the violated one) or "Medea Americana" and make her a scapegoat for the defeat of Montezuma's empire by the Spanish. The authors will use Spanish, Mexican and Chicano sources to throw light on this unusual woman, her character, her actions and the crucial role she has played in the Chicanos' search for their ethnic identity.

The main objective of this study is to shed light on the controversial views held by Mexican and Chicano writers concerning the role of Doña

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Marina in the conquest of New Spain. This historical event represents the encounter of two diverse civilizations which developed separately on the two continents independent of each other. The outcome of this confrontation was inevitable. Technologically, the indigenous civilization belonged to the stone age while the invaders enjoyed all the advantages of the weaponry and military skills of sixteenth century Europe. Yet the course of events in such encounters depends not only on the military capabilities of the contenders, but also on the intelligence, ideology, objectives and attitudes of the leaders in control of power. Their ability to assess correctly the situation in each confrontation is an important factor which can reduce the possibility of costly mistakes on both sides. During the encounters between Spaniards, Aztecs and other Indian tribes, Doña Marina served not only as translator and interpreter, but also served as a bridge between diverse cultures viewing the same events but in a different light. On numerous occasions her intelligence and insight reduced the possibility of potential treachery and blunders with all their tragic consequences. "Through a strange caprice of luck" wrote Manuel Orozco y Berra, (Marina) came to be the arbiter of the destinies of the invaded nations. Through her passed the speeches of ambassadors, the complaints of the oppressed, the submission of cities."[1] In view of this her role in the conquest cannot be easily overestimated. One may ask the question. What would have happened if Marina had not been there? Though Cortés and his forces could have been defeated and destroyed, the conquest of New Spain was imminent.

This study describes the decisive role Marina played in the conflict emphasizing her impact at crucial points of the expedition. In addition to the mark she left on physical events, her part in the Mexican and Chicano search for identity is subjected to systematic evaluation. The humiliating defeat suffered by the Aztecs at the hands of the Iberians led to the need to place guilt on someone. Marina was a convenient target for scapegoating. The negative self image emerging from this process developed the so-called "burden of heritage" which torments some Mexicans and Chicanos up to the present time.

The process of self denigration is characterized by scapegoating women in general and Marina in particular, ignoring the fact that Indigenous women were completely at the mercy of their men who gave them as slaves and concubines to the invaders. Marina has been depicted

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[1] Manuel Orozco y Berra, *Historia Antigua y de la Conquista de Mexico*, (México: Tipografía Gonzalo de Esteva, Vol. 4, 1880), p. 119.

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as the symbol of voluntary betrayal of her race. Thus, such non-flattering terms as "la chingada" referring to Marina and "hijos de la chingada" referring to her descendants were coined to express frustration caused by the infamy of defeat. The absurdity of those accusations verbalized in the vernacular are obvious, yet they persist.

The writer distinguishes between direct and indirect vindication of Marina. Accusations against her are refuted directly point per point by her supporters. Yet the most powerful indirect vindication is provided by Braulio Munoz in his article, "The New Man" in which he states that mestizos have inherited the best of both races and can be proud of their heritage.

While detractors of Marina stubbornly hold their position, her defenders stopped at the point of vindicating her. The rest of this study points to the need to restructure the Marina-Llorona myth according to historical evidence. It is suggested that it be recast in positive terms and thereby become not a weapon of defamation, but an instrument to glorify Malinche and her descendants. This vindication has strong potential to liberate the Mexican and Chicano psyche from the tyranny of myth which deprives them of their self respect and self realization.

Decisive Role of Marina in the Conflict

From the moment that Cortés discovered that Marina spoke not only the language of the Maya, but also Nahuatl, the language of the Aztecs, until the end of the conquest, she was at his side as his constant companion. He himself recognized the decisive role his interpreter played in the ultimate domination of New Spain when he said, "After God we owe this conquest of New Spain to Doña Marina."[2]

Adelaida Del Castillo lists five reasons for the success of the Spaniards in the New World: military advantage; political causes; biological causes; religious conflict; Doña Marina's competence."[3] Undoubtedly the Spaniards' steel helmets and body armor of steel, their crossbow with steel-tipped arrows, their muskets, cannons and steel swords afforded them great advantage over the stone-age weaponry of the Indians. Moreover, the Indians had nothing to compare with the Spaniards' horse described by

[2] Jeffrey Wilkerson, "Following Cortés: Path to Conquest," *National Geographic Magazine* 1, (October, 1984): 448.

[3] Adelaida Del Castillo, "Malintzín Tenepal: A Preliminary Look Into A New Perspective," *Encuentro Feminil*, Vol. 1, No. 2, (1974): 58.

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Montezuma's ambassadors as "a deer as tall as the roof of a house."[4] The advantages the Aztec had were their numerical superiority, knowledge of the terrain, adaptability to their native environment, secured provisions and the heroism they displayed in defense of their land.

The outcome of the conflict depended greatly on the decisions of leaders on both sides. Montezuma was victim of his own theocracy in which religious beliefs took precedence over logical political-military decisions. Cortés had Marina whose contribution was invaluable in assisting him in his crucial moves by making him aware of the internal divisions within the Aztec empire. She facilitated the conqueror's strategy of *divida et impera* by helping him to arouse in the Indians subjugated to the Aztecs the hope for liberation thereby exploiting one of the major weaknesses of Montezuma's empire. Doña Marina served the Captain General so effectively that the Indians identified Cortés with her instead of the reverse. Both became known by the reverential form, Malintzín, later corrupted by the Spaniards to Malinche which is Doña Marina's name in Mexico. Federico Gomez de Orozco writes: "Marina's competence rested on the fact that she knew "how to add on, reinforce, soften or change whatever subject she was dealing with at the time, whenever the circumstances required it and always for the successful outcome of the matters at hand and for the wellbeing of all involved."[5]

At Cempoala Cortés already discovered the great discontent that existed among Montezuma's subjects. It was Marina who drew from them their complaints and in turn explained to them who the Spaniards were, where they came from and why. She also conveyed to the Indians their obligation, according to Cortés, to forfeit their centuries old customs and replace them with new ones. With such radical demands put upon them Marina's presence and convincing explanations unquestionably softened the blow and most likely warded off many violent reactions on the part of the Indians who were fearful of displeasing their gods.

At Quiahuitzla, to demonstrate his good intentions, Cortés ordered the Indians to arrest the emperor's tax collectors who had just arrived. Then he told the Indians "to cease paying tribute and obedience to Montezuma and if tax collectors came to any other towns, he must be informed .... As they now paid no more tribute," wrote Bernal Díaz, "and the tax gatherers had disappeared, they could not contain their delight at having thrown off

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[4] *The Broken Spears*, ed. Miguel León-Portilla, (Boston: Bacon Press - 1962), p. 30.

[5] Federico Gómez de Orozco, Doña Marina: *La Dama de la Conquista*, (México: Xochitl, 1942), p. 124.

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the tyranny of the México."[6]

The most difficult task facing Cortés and Marina, as his interpreter, was to convince the Tlascalans of the Spaniards' good intent as they marched toward their city. This tribe's territory had often been invaded by the Aztecs by craft and cunning and then laid waste. They believed that Spaniards were sent by Montezuma and were attempting similar tactics. In the battle that ensued, caused by misunderstanding, both sides suffered casualties, yet the outcome was an alliance of the Tlascalans with the Spanish. Failure to make them allies could have aborted the whole operation of the conquest. Despite the temporary setback, skillful persuasion obtained for Cortés a large military force and passage to Tenochtitlán.

During this period of tribulation, Marina demonstrated compassion and bravery. Bernal Díaz reports, "... Doña Marina ... possessed such manly valor that though she heard every day that the Indians were going to kill us and eat our flesh with chillis and though she had seen us surrounded in recent battles and knew that we were all wounded and sick, yet she betrayed no weaknesses but a courage greater than that of a woman ..."[7]

The other place where Marina made the difference between life and death for the Spaniards and Tlascalans was at Cholula the last large town on the way to Tenochtitlan. Her major contribution there was to find out exactly where the attack on these forces was intended to take place thus saving them from ambush.[8] Ironically the importance of her contribution is supported by one of her detractors. Ernest Gruening states: "Cortés and his band would also unquestionably have been slaughtered at Cholula had not Malintzín ... betrayed her own people and brought about their massacre by the Spanish cannon and cavalry."[9]

Search for Identity and Burden of Heritage

Undoubtedly Doña Marina is one of the most controversial figures in history. Judging by objective standards based on an evaluation of the totality of her situation, her behavior and the outcome of her actions, she could be considered both a heroine and a traitress. Some see her as a

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[6] Bernal Díaz, *The Conquest of New Spain*, (New York: Penguin Classics, 1983), p. 113.
[7] Ibid., p. 153.

[8] *National Geographic Magazine*, ... Op. Cit., p. 448.
[9] Ernest Gruening, *Mexico and Its Heritage*, (New York: Century Pub. Co., 1928, p. 79.

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remarkable, courageous woman who, despite great sufferings and deprivations inflicted on her by her own mother who gave her to traveling merchants bent on selling her as a slave to a Maya chieftain who, some years later presented her to Cortés as a gift, remained strongly committed to a cause she considered just. Unfortunately, the majority of Chicanos, like most Mexicans, view her as a turncoat who betrayed her own nation and assisted Iberian invaders in their conquest of the Aztec empire.

Though Marina's period of influence on events in New Spain was relatively shortlived, her overall impact on events and subsequent historical development was great. Without her ameliorating influence the losses on both sides due to mistrust and misunderstanding would have been much greater. Much more important than the immediate impact of her behavior during the conquest was the vitality of her imprint on the minds of those Mexicans and Chicanos who are deeply concerned with the search for their own national and ethnic identity. The difficulties in assessing her role within the historical events that took place during the conquest of Mexico were greatly accentuated by the feeling of humiliation and inadequacy of those Mexicans and Chicanos who are convinced that their nation was subjected to a "double rape": first by the Spaniards in the early sixteenth century and then by the "Anglos" in the middle of the nineteenth century. Many of them seek a foundation for their national pride in the past glory of the Aztec empire and such noble symbols as Atzlan and La Raza. They considered it unacceptable to place the blame for the devastating defeat of Montezuma's empire by the Iberians on technological inadequacy, lack of unity and the religious misconceptions of the former. Under the circumstances, it was extremely difficult for them to see Doña Marina as she really was. It was definitely much easier to make her the scapegoat for the defeat of the Aztecs.

In the 1960's the United States was experiencing an explosion of group identity which consisted in the realization by several ethnic groups that their ethnic background was very important for their feeling of security and wellbeing. Ethnic minorities in the United States not only regained a sense of personal pride in their national heritage but also recognized that it can contribute to their success in American society. The feeling of inferiority shared by some minorities was replaced by ethnic pride. It started with the concept "Black is beautiful" and culminated in the all-encompassing symbol of the "rainbow coalition." Like other ethnic minorities, the Chicanos are searching for their own historical-cultural roots.

In general, search for identity is a complex process which has three essential parts which consist in finding answers to the following questions:

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(1) what are our roots? (2) who are we now? and (3) what do we want to become? Each question represents a time dimension: past, present and future. A nation, as well as an ethnic group, must have roots which are acceptable, rewarding and inspiring, but unfortunately Mexican-Americans have considerable difficulty with reconciling themselves with their historical roots because of the "double rape" previously mentioned. It is very difficult to develop national or ethnic pride on the basis of such ego-shattering experiences as those two consecutive defeats by outsiders. The Chicano suffered an additional "triple rape: rape of the land; rape of the mother; rape of the culture – by the white man."[10]

Mexico, the Chicanos' former motherland, has a similar problem, that of finding its own national identity. "The search for an identity and for socio-political advancement preoccupies Mexicans as well as Mexican Americans." Yet, "when the Chicano looks to Mexico for an example for resolving similar problems in this country, he sees the average Mexican's poverty, ... his cultural conflicts, and the lack of political direction within Mexico," as well as "class, regional, and ideological cleavages ... and recurring crises of political legitimacy."[11] And since "Chicano roots lie naturally across the border to the southern republic beyond," their search becomes even more difficult.

Most Chicanos represent a mixture of two races: white and indigenous Indian. They intermingled under the ignoble circumstance of conquest and subjugation. The results of this forced miscegenation is the Chicanos' failure to integrate the roots of their beings. This "burden of heritage" is dramatized in *The Burning Waters* by Estela Trambley who depicts the failure to integrate "the indigenous native side with the colonial Spanish side."[12] In Rina Palacio's words, "the Hispano-American carries in his character the brand of the combat sustained so long between the two races which gave him his origin. Duality and clash of rival natures explain much that is inexplicable in Mexican history."[13]

Braulio Munoz expressed the anguish of Chicanos caused by their inability to free themselves from this "burden of heritage" in the following

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[10] Robert E. Villareal and Philip Kelly, "Mexican Americans As Participants in United States – Mexico Relations," *International Studies* Notes of the International Studies Association, Vol. 9, No. 4, (Winter 1982): 3.

[11] *The Third Woman: Minority Women Writers of the U.S.*, ed. Dexter – Fischer (New York: Houghton-Mifflin, 1980), p. 91.

[12] *The Third Woman*: ... Op. Cit., p. 311.

[13] Rina Palacio, *México A Través de los Siglos*, (Barcelona: Espasa y Cía Vol. 11, 1888-1889), p. 914.

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words: "We know that in order to encounter ourselves, we must look into the dark center of our past ... we seek an answer to the riddle which we are, we who straddle two irreconcilable worlds." The expression, "ni aquí ni allá," truly represents the Chicano's sense of being in two cultures yet belonging to neither. The indigenous pre-Columbian and European worlds could never come together harmoniously. This is the main reason for the deep internal struggle of Chicanos in search of their ethnic identity.[14] In the XVIII century Spanish observers of conditions in New Spain reported back to the Spanish king: "It is incredible that among peoples of the same nation ... there should exist so much enmity, bitterness and hatred ... (as well as) ... violent discord between Spanish and Creoles. It is a common occurrence to hear people say that if they could tear out the Spanish blood which they have inherited from their Fathers, they would gladly do so in order that it might not taint that which they have inherited from their Mothers."[15]

Scapegoating Women and Doña Marina

Defeat and conquest cloud objectivity. It is a common human tendency to blame somebody for the humiliation suffered in past catastrophies. In the Chicanos' case, the major scapegoat is Doña Marina, Cortés concubine and mother of his son, Martin. She has been labeled "a whore, the mother of a bastard trace of mestizos, and a traitress to her country." For many Chicanos she still represents "deviance, and (is) ... a symbol of damned femininity" as well as "a cultural burden to subsequent generations of Mexicanas and Chicanas."[16]

Not all Chicanos, of course, share this view of Malinche. "Because history is notorious for depicting the female as being one of the main causes for man's failure" wrote Adelaida Del Castillo, "it is extremely important that we understand the ethics with which historians, most of whom have been men in the past, distribute blame and justice." She believes that Doña Marina received an undeservedly harsh and erroneous judgement at the hands of most historians and other writers in the past and it can be explained by two things: "(1) the misinterpretation of her role in the conquest of Mexico and (2) an unconscious, if not intentional,

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[14] Braulio Muñoz, "On the New Man," *Comparative Civilizations Review*, Spring, No. 12, (1985): 69.

[15] J.A. Crow, *The Epic of Latin America*, (Berkeley: University of California Press, 1980), p. 400.

[16] A. Mirandé and E. Enríquez, *La Chicana*, (Chicago: Chicago Univ. Press, 1979), p. 24.

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misogynistic attitude toward women in general, especially toward self-assertive women on the part of western society as a whole."[17]

To place full responsibility for the success of the Spanish conquest of New Spain on Marina is a distortion of history. It is difficult not to agree with the arguments of some respected writers, themselves Chicanos: "With or without Marina, the conquest of Mexico was inevitable, and what emerges ... is that a female historical figure had her role lifted from its proper time and place, was made a cultural scapegoat and was blamed for a tragic clash between cultures," in which she had no way of avoiding or impeding destruction, but she did mitigate it.[18]

Octavio Paz, in his book *The Labyrinth of Solitude*, states that "when a Mexicano repudiates La Malinche – the Mexican Eve – (he) breaks his ties with the past, renounces his origins, and lives in isolation and solitude."[19] According to him, the conquest of Mexico was a violation in itself and he sees Doña Marina as the violated mother because she was Cortés mistress. Therefore, Chicanos, as mestizos, are "the offspring of violation or "hijos de la chingada" and La Marina "is to be demeaned and denigrated."[20]

Carlos Fuentes depicts Marina as a destructive traitress as well as "la mala mujer" the whore and a selfish person motivated by lust for her own gratification. Fuentes expands his denigrating accusations to all women. He implies "that if women are rotten creatures, it's not their fault. According to him, women "are not even acknowledged as creatures responsible for their own actions." He believes that women are inherently evil and therefore need to be dominated by men.[21] In this context it is difficult to understand how the woman, the violated one, is to blame for being violated while the man the violator is not. As a matter of fact the violator becomes the accuser of the violated. This is a flagrant case of scapegoating women. In a broader historical context of the conquest of New Spain, one must remember that indigenous Indians, not their women, lost the war, and it was their chieftains who were giving their women to the conquerors as concubines and slaves. Shifting of responsibility on those who were weak and helpless in that monumental struggle should be below the dignity of a man who should have the courage to admit his defeats and shortcomings and take the consequences of his failures.

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[17] Adelaida Del Castillo, "Malintzín Tenepal: ... Op. Cit., p. 69.
[18] *La Chicana*, Op. Cit., p. 31.
[19] "Malintzín Tenepal: ..." Op. Cit., p. 73.
[20] Ibid., p. 73.
[21] Ibid., p. 70.

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The accusation that Doña Marina was the mother of the first mestizo has no basis when one considers the historical fact that "mestizaje did not originate with Doña Marina; it was occurring elsewhere during the conquest with the birth of children to other conquistadors and Indias."[22] In fact, the phenomenon predates Cortés arrival. Yet, even if she were the first native woman to give birth to the first native mestizo, this alone would not necessarily mean a deliberate betrayal of her native land and people. Moreover, Chicanos should regard the emergence of a mestizo race as a blessing rather than a curse.

We Mestizos – Indirect Vindication of Doña Marina

Careful study of historical facts will eventually vindicate Doña Marina as a woman and as a person. Yet this direct vindication might not be necessary if Mexicans and Chicanos, in their frantic search for identity, would stop considering themselves "a product of the rape of one civilization by another and a living testimony to the unequal power between two cultures and two races." Braulio Muñoz provides indirect vindication of Marina by placing the mestizos of Latin America in proper historical perspective. Before Bolívar's revolution," he stated, "for years we were determined to deceive ourselves in celebrating a white European culture that did not allow us to be its equal."[23] "From Bolívar on," he wrote, "being mestizo meant that we hosted within ourselves something new, portentous, exemplary, promising we hosted the New Man ... (who) ... learned to overcompensate while overvaluing that which he was rejecting." And he concludes, "we were the distillation of the good inherent in each and every race of humanity."[24]

According to Braulio Muñoz, the obsession with living in the past must be replaced with understanding of the present and working for self realization in the future. "The New Man is here," he wrote, "in the present. The New Man is not in us, he is us. We must re-live the trauma of birth, work through it, if we are to emerge to face a future free of the ghosts of the past and the shackles of self-hatred." For Muñoz, "to search for identity is to make it ... The future belongs to those who risk seizing the present. To be sure," he continued, "there will be errors made but there will also be deserved happiness. The New Man will never be perfect,

[22] *La Chicana*, Op. Cit., p. 65.
[23] "On the New Man" Op. Cit., p. 71.
[24] Ibid., p. 72.

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for he is us."[25]

Viewed from this vantage point, Doña Marina, instead of being blamed for contributing to the creation of a "bastard race" should be considered a great woman personifying the beginning of the mestizo nation. As "the first Indian to be christianized in her native land" she again is the starting point in building a cultural and spiritual bridge between the two races.[26] If the mestizo represents a proud new "cosmic race" all accusations against Marina of miscegenation become meaningless.

Direct Vindication of Doña Marina

Several Mexican and Chicano writers are taking part in efforts to vindicate her. Only a few points of this process of removing unjust accusations are mentioned here. Among the points taken are the accusation of being traitress to her country; branding her as a selfish person seeking her own personal gratification; the accusations of being devoid of compassion and causing the slaughter of innocent Indians; and presenting her as the prototype of a fallen woman, a Mexican Eve.

Historical data coming to light recently should force Malinche's critics to reconsider their charges that she was a traitress to her native land. "Mexico at the time of the conquest was not the unified republic it is today, but a conglomerate of tribal city-states in which no national identity existed," wrote Mirandé and Enríquez. The desire of oppressed indigenous tribes to be liberated from the tyranny of the Aztec empire and prophecies of doom in Aztec mythology were powerful forces which made the conquest possible, not solely Marina's work as Cortés' interpreter. She cannot be blamed for the tragic clash between cultures which occurred during the conquest and in its aftermath. "With or without Marina, the conquest of Mexico was inevitable."[27] Yet, her work did contribute to the amelioration of losses on both sides. As a neutral party Marina became a "mediating force between adversaries, both of whom esteemed her. Thus her role was positive and instrumental."[28] The unintended consequences of the fateful collision between the Aztec and Spanish empires were the creation of a mestizo nation and the forgoing "of a Cosmic Race."

Concerning the accusation of selfishness, all participants on Cortés' side clamored for material rewards for their services except Marina: "Only

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[25] Ibid., p. 76.
[26] "Malintzín Tenepal: ..." Op. Cit., 71.
[27] *La Chicana*, Op. Cit., p. 31.
[28] Ibid., p. 30.

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Doña Marina neither asked for nor alleged that anything was due her despite the fact that if anyone had a right to compensation, it was she who because of her hardships and accomplishments, deserved to be at the top of the list of claimants."[29]

The contention that Marina was coldblooded and devoid of compassion is refuted by historians and chroniclers. Miranda and Enríquez quote Prescott who stresses "her open, expressive features (which) indicated her generous temper ... uncommon personal attractions (and) ... lively genius." Bernal Díaz wrote that "she was truly a great princess ... as was very evident in her appearance." The fact that she forgave her mother, who had dispossessed her, and treated her with love and respect definitely speaks in favor of Malinche.[30]

A great injustice was committed against Marina by presenting her as the epitome of all evil. As the Mexican Eve she was juxtaposed to "la Virgen de guadalupe, who embodies the most virtuous feminine attributes: piety, virginity, forgiveness, and saintly submissiveness." This type of presentation created a "polarized perspective of women ... whereby only La Malinche as supreme evil and La Virgen as supreme good are possible."[31]

Redemption of Marina is more of a Chicana phenomenon than a Mexican one and more of a work of Chicanas than their male counterparts. A Mexican woman, Juana Armanda Alegría and a Chicana, Adelaida Del Castillo, have contributed greatly to the cause of Malinche's rehabilitation, reevaluation of her historical role and her potential cultural mission. A much-maligned Malinche is reconsidered now as a remarkable woman "by virtue of her personal character and attributes, and viewed as positively as she was in her own times.[32] Doña Marina can be truly considered "La heroína olvidada de la historia."[33]

Doña Marina and the Myth of the Llorona

The search for direct and indirect vindication of Doña Marina must lead to a reevaluation of her role in Mexican mythology. Due to a perverse historic twist the figure of La Llorona with all her negative implications, has been imputed to Marina or perhaps the role of Marina

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[29] *Doña Marina: La Dama de la Conquista*, Op. Cit., p. 126.
[30] *La Chicana*, Op. Cit., pp. 26, 27.
[31] Ibid., p. 28.
[32] Ibid., p. 29.
[33] Miguel Angel Menéndez, Malintzín, (Mexico: La Prensa, 1964), p. 38.

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in the Mexican and Chicano psyche has given new interpretations to La Llorona. Whatever the case, the vindication of Marina will not achieve its full impact on the Chicanos' psyche unless there is a complete reassessment not only of her historical, but also of her mythological role. According to Fabiola Cabeza de Baca, "the spirit of a people resides in its folk beliefs and expressions."[34] The study of Mexican mythology is an essential part in explaining the nation's origin and in the development of its self image and ultimately in the Chicanos' search for identity. This can be done, not by rejecting the connection between Marina and La Llorona, but rather by accepting her as the embodiment of La Llorona while redefining this mythological figure's essential characteristics. It is easier to reconstruct the myth than to kill it.

Historically, La Llorona has been conceived as a mother whose guilt consisted of crimes committed against her children through abandonment, betrayal and even murder. In this sense she is a pathetic figure of hopelessness, helplessness and despair. For those in search of a scapegoat, Marina was made to fit into this pattern and consequently has been depicted by writers and folklorists as a woman who betrayed her children the Mexican nation thus plunging them into infamy.

The deepest roots of Mexican and Chicano identity lies in their indigenous Indian past in which La Llorona was ever present. According to Gustavo Rodriguez, "the tradition of La Llorona has its roots in the mythology of the ancient Mexicans."[35] "In prehistoric Mexico, Sahagún records that sounds of wild beasts or a woman's cries heard at night were considered ill omens by the ... agoreros (diviners). The cries foretold poverty or death for the individual who heard them. Another early interpretation is offered by Alfonso Caso who traces La Llorona to Cihuacoatl, the patron of the ciuateteo-sanctified women who died in childbirth. On days of the calendar dedicated to them, they descended to the earth wailing and moaning in the night air .... As Cihuacoatl, La Llorona is said to carry a cradle or the body of a dead child in her arms and to weep at night at the crossings .... In times gone by, people knew that she had passed that way when they found in the marketplace the empty cradle with a sacrificial knife laid beside it."[36] Sahagún also links La Llorona with Cihuacoatl and describes the latter as appearing "often as

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[34] *The Third Woman*: ..., Op. Cit., p. 310.

[35] Gustavo Rodriguez, *Doña Marina*, (Secretaria de Relaciones Exteriores, 1935), p. 47. (Translation by the writer).

[36] *La Chicana*, Op. Cit., p. 31.

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a woman dressed in court robes; it was also said she groaned and cried out in the night air."[37] Gustavo Rodrhiguez quotes Sahagún who relates that "among the many omens or signs with which the conquest by the Spaniards was announced, the sixth prediction was that at night many voices were heard as coming from a woman full of anguish who cried out, 'Oh my children, your destruction is at hand! And other times she said, Oh my children, where shall I take you so you won't be lost?"[38] He goes on to say that "the tradition is very remote and existed at the time of the arrival of the Spaniards and that once they had taken the Aztec city and years later when Marina had already died, they tell the story that she was La Llorona who came back from the old world to atone for having betrayed the Indians of her race by helping the foreigners subjugate them."[39]

Thus through a process of cultural syncretism, the combining of different elements into a whole, legends began to appear in the 16th C. that could be traced to both Spanish and Indigenous origins. One of the most famous of these is La Llorona ..."[40] Mirandé and Enríquez explain how this legend has persisted "not only through time but through space as well. Migrations to the north of Mexico, today the Southwestern United States, carried the myth into Chicano culture. Among other states, California and Texas have unique oral presentations of who La Llorona is and what she represents. In California, for example, she is a woman who killed her three children so she might continue her wild life. When she died, she was unable to account for them to God, so she was sent on a painful, eternal search for them. An Austin version also depicts her as a woman who disposed of her two children by drowning them because she did not want them. Other Texan interpretations present her as a seductive siren who is followed along a river or through the streets only to turn around and terrify her followers with an eerie face or frightening cry.[41] Chicanos are haunted by the image of La Llorona .... She runs screaming through our uncapped skulls looking for her lost progeny. Are we her lost children? Los olvidados hijos de dos sangres enemigas?"[42]

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[37] Ibid., p. 31.
[38] *Doña Marina*, Op. Cit., p. 48.
[39] Ibid., p. 48.
[40] *The Third Woman*: ..., Op. Cit., p. 308.
[41] *La Chicana*, Op. Cit., p. 33.
[42] "Malintzín Tenepal: ..." Op. Cit., p. 72.

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From Redemption of Marina to Redemption of Chicanos

In almost five centuries that have passed since the conquest, the controversy over Doña Marina has become stronger and the gap between her most vigorous detractors and ardent defenders has not narrowed. Writers such as Octavio Paz, Carlos Fuentes, Ignacio Ramírez and others sustain the ironic twist of history by affirming the Marina-Llorona role in its most negative form. Due to the hopelessness and despair inherent in this myth, there is a need for rectifying past injustices committed against Marina and her children the Mexicans and Chicanos. This rectification is necessary not just for the sake of justice, but for the sake of liberating Chicanos from the burden of their heritage, from the psychological complex which has tormented them for so long.

Her most ardent defenders, Juana Armanda Alegría, Adelaida Del Castillo, Gustavo Rodríguez, et. al., who are working on the reassessment of Marina in her historical role, represent a dialectical swing in the opposite direction. "After all Doña Marina had endured" writes Adelaida Del Castillo, "to bring forth a new world, few recognized or acknowledged her merits and contributions to it. No one, not Cortés, not the Catholic Church, nor her own husband, not even history itself, nor the mestizo nation she gave birth to realize the great injustice they have done by her obscuring her in defamation."[43] But even her most dedicated admirers stopped at direct vindication and did not go beyond the recognition of Marina as "la heroína olvidada".

The next logical step which will be eventually made is the historical vindication of Marina through restructuring the myth of La Llorona in terms of historical evidence. Traditionally La Llorona is seen as a mother crying in despair for what she had done to her children. Could it be that Marina as La Llorona might be crying because she was rejected by her children and not the other way around? It was they who accused her of crimes she did not commit. Hope for redemption lies in her children's acceptance of her for what she is – the mother of what Braulio Muñoz calls "The New Man" – the Cosmic race. Her agony consists in seeing her children suffer from respect withdrawal, self-denigration and unwarranted scapegoating.

The need for restructuring the Marina-Llorona myth can easily be accepted by her defenders, but true convergence is impossible without converting her detractors. Yet, general acceptance of this reassessment is

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[43] *Chicano Literature: Texto y Contexto*, Shular, Ybarra-Frausto, Sommers, (New Jersey: Prentice Hall, 1972), p. 97.

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perhaps the most effective way for Chicanos to liberate themselves from their self-imposed burden of heritage and its destructive implications. There remains the need to convince those detractors of Marina that they must face historical facts and liberate themselves from the tyranny of a myth they have helped to perpetuate. Will Mexican and Chicano intellectuals be capable and willing to accept this reorientation? Only they themselves know the answer. Again, will they accept that such a change in thinking would contribute to the liberation of the Mexican and Chicano psyche from a self-imposed immolation which has, to a large extent, denied them of both their self respect and their hope for future self realization? Recognition of this truth will make them free and restore a pride in their roots which will place them on equal terms with all other nationalities. An understanding of their roots is a necessary condition for enhancing their self-image, which in turn will have a crucial impact on their choice of means for their future self-realization.

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"FOR PURUṢA'S SAKE": PSYCHOANALYTIC SELF PSYCHOLOGY AND THE METAPHYSICS OF SELFHOOD IN INDIAN THOUGHT: PART 1

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Relationships of the type self: world (*ātman* : *sṛṣṭi, jagat*); consciousness : content (*jñāna, puruṣa, kṣetrajña* : *viṣaya, kṣetra*); enjoyer : enjoyed (*bhoktṛ* : *bhukta, bhoga*); and agent : action done (*kartṛ* : *karma*) are matters of central concern in classical Indian metaphysics (Potter, 1963). Previous work has shown that both in the oldest stratum of Sanskrit culture (Collins and Desai, 1986; Collins, in press) and in contemporary India (Marriott, 1989) boundaries between persons and their "environments" (including other persons) are understood as highly permeable and interactions between them as fluid. Indeed, persons and their worlds depend for their existence and natures on past and present interchanges of substance with one another, and cosmogony – a highly "marked" topic in Indian culture – generally takes place through a procreative transfer of substance between creator (emanator, emitter) gods and their "creations." The Cosmic Man (*puruṣa* or *Prajāpati*) is a Vedic example previously examined in some detail (Collins and Desai, 1986; Collins, in press).

Parallel with flows of substances, and indeed part of the same process, early texts (Collins and Desai, 1986; Collins, 1990; Collins, in press) and contemporary anthropological accounts (Inden and Nicholas, 1977) discuss self- and personhood as something shared between "creator" gods and their world (which includes humans) and among human beings. For example, Inden and Nicholas have shown that in Bengali culture all the "descendants" of the male "head of the family" (to use roughly comparable Western terms) share in his body and are thought literally to be part of him, in a way quite parallel to the continued inherence of the world in the Cosmic Man. That is, not only does this man, who is called the family's (*parivara's*) *Kartā* ("maker"), pour his substance into the family (which, as the product of his action, we could properly call his "*karma*"), but the family remains tied to him as its source of unity.

> He is the living seed-man (*puruṣa*), the living divinity of the family and his body is the microcosmic form of the cosmic purṣua out of

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> body the world was created....the body of the *Kartā* encompasses the bodies of all the living persons of his family, signifying their unity. (Inden and Nicholas: 30)

Thus while the *Kartā* can refer to the family as "mine" (accenting its origin from him), other family members say "persons of our house" (emphasizing the sharing: 7).

The flowing out and sharing of selfhood has its darker side. In the Vedic cosmogony of the Cosmic Man, Prajāpati loses his bodily integrity by emitting himself into the world, as his selfhood is usurped by the creatures born from him (Collins and Desai, 1986; Smith, 1989: 67, etc.). Similarly, the human father in the Vedic story of Śunaḥśepa appears to be (unconsciously) afraid of losing his powers to his son, and therefore tries to sacrifice the son to the father god Varuṇa (Collins, 1990); this effort to bind the son to the selfhood of the father fails, as the son abandons his father to wander in the forest. The rest of the tale attempts to reconcile the selfhood interests of the father and those of the son. The inherent conflict between the creative self and its products might be called the asuric ("demonic") side of their relationship,[1] and leads at many points in Indian culture and thought to a radical split between two kinds of self: an "absolute" one beyond or before the world and a relative one in (and a part of) the world. Understanding and justifying the split has been a major concern of India's philosophies (of Hulin, 1978).

Compared to India, Western thought has generally maintained a sharper, less permeable boundary between persons and their "worlds"

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[1] In the terms of the British psychoanalyst D.W. Winnicott, whose ideas will be discussed shortly, an "asuric" moment would be the "disillusioning" of a person who previously felt in control of (and in tune with) her own world. For instance, a three year old whose favorite teddy bear is thrown away because it is "dirty" may be suddenly plunged into the traumatic experience of feeling her world slip out of her control, and lose (to some extent) the sense of being "mine." The absent teddy bear might be blamed by the child for its disappearance and be treated in absentia as "bad" (hurtful, malevolent). Object relations psychoanalysis considers it developmentally appropriate for children of this age to "split" their worlds into "good" and "bad" parts or aspects (cf, e.g., Kernberg, 1976); these are readily understandable as elements of experience which do or do not conform to the desires of the self.

In the *Bhagavad Gītā* (7.12-15) the loss of contact with the supreme self, and the divine "mineness" of the world, happens as a result of the apparently self-less functioning of material nature (the guṇas). For the *Gītā*, asuric life (*āsura bhāva*) arises from the *illusion* (rather than disillusionment) that nature does not conform to the divine self; the truth is that the world is in the self (Kṛṣṇa), although it does not meet his needs since, unlike the Vedic Prajāpati, Kṛṣṇa has none. This is the *Gītā*'s way of overcoming the conflict between the self and its world.

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(human and otherwise);[2] a cosmogonic example would be the Judeo-Christian God's creation *ex nihilo*, rather than by emanation from His "body." In classical psychoanalysis, a primary aim of healthy development is the attainment of a strong ego able to see and acknowledge "reality" as it is and to establish "boundaries" between self and world, thus overcoming confusion between the world and the interior fantasies and desires of the "id." Only with firm boundaries can the person seek genuine (not fantasied) libidinal satisfaction through relations with "objects" which are truly outside himself. Recently, however, some psychoanalysts have begun to see the positive value, and indeed necessity, of a shared sense of selfhood between a person and his environment. Winnicott (1971) and especially Kohut (1968), the principal thinkers of this shift, have created a psychoanalytic "self psychology" which seeks to understand why and how an appropriate world is essential to the selfhood of persons, and *vice versa*. Kohut's key concept is that of the "selfobject:"

> *Selfobjects* are objects which we experienced as part of our self; the expected control over them is, therefore, closer to the concept of the control which a grown-up expects to have over his own body and mind than to the concept of the control which he expects to have over others. There are two kinds of self-objects: those who respond to and confirm the child's innate sense of vigor, greatness and perfection; and those to whom the child can look up and with whom he can merge as an image of calmness, infallibility and omnipotence. The first type is referred to as the mirroring selfobject, and the second as the idealized parental imago. The *self*, the core of our personality, has various constitutents which we acquire in the interplay with those persons in our earliest childhood environment whom we experienced as selfobjects (Kohut and Wolf, 1978).

Despite the aknowledgment of a shared selfhood between the person and some parts of his environment, Kohut and Winnicott continue to accept the psychoanalytic view that there also exist "libidinal objects" with which there is no shared self-sense. They also accept that the boundary

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[2] The issue of "individualism" (Dumont, 1970) is obviously relevant here. For Dumont, the realm of the individual is "encompassed" in India by the ideology of "hierarchy;" one might argue that the self-sense of persons living in an environment of hierarchy would be spread over the whole hierarchical structure rather than limited to the person "himself." Conversely, individualism might be defined as an ideology which views the self-sense as limited to a particular person. See Roland (1988) for a discussion of the "we self" idea.

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between persons and and selfobjects ("transitional objects" in Winnicott's case) should grow stronger with psychic maturation and the development of internal "structures," although each thinker would qualify this: Winnicott (1971) in the case of "creativity;" Kohut (1977) with regard to later life and the development of "wisdom." Winnicott is forced by his Western (and psychoanalytic) perspective to assert that the "transitional" area between the person and his world (similar to Kohut's selfobject dimension), although the source of genuine selfhood and creativity, is nevertheless an "illusion" which is partially given up in adulthood (except in areas like art and religion). The illusion is essentially a person's sense that he *creates his own world*, as when a baby "creates" transitional objects such as stuffed animals[3] with which he then plays. Winnicott says of such phenomena:

> It can be said that it is a matter of agreement between us and the baby that we will never ask the question: 'Did you conceive of this or was it presented to you from without?' The important point is that no decision on this point is expected. The question is not to be formulated (1971: 14).

Similarly, in adulthood, we tacitly agree not to question one another about the reality value of our "creative illusions" such as religious beliefs. It is essential to the development and maintenance of a sense of being a self that one experience oneself as creating one's world (at least its most essential parts), even though this is an illusion. As Winnicott says, "this matter of illusion is one that belongs inherently to human beings, and that no individual finally solves...." (1971: 15).

Kohut posits the normal development of internal structures which create a boundary between the self and the outer world; these are the *nuclear self* and its constituent goal-directed motives of *ambitions* and *ideals*. Although of a quite different nature, the nuclear self takes the place of the Freudian ego; rather than controlling and accomodating psychic forces, it is a sort of "blueprint" for self-related feeling and action over the life span. It directs the person towards using those parts of his body and mind, and seeking those aspects of the external world which will produce

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[3] More exactly, it is not the physical toy that is "created" but rather the "personality" of the teddy bear, blanket, etc. For example a three year old girl named her transitional blanket "my me," and talked to it as if it were (as to her it was) her own naughty nature; she would instruct it, spank it, and comfort it by turns (personal observation).

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a stable sense of self (or self esteem), and conversely leads him away away from outer and inner experiences which will detract from a strong, cohesive and balanced sense of self; it avoids grandiosity and traumatic deflation of the self-sense. The nuclear self constitutes an organized representation of who the person considers himself to be, and who it is his nature to become.

> Self psychology ... considers them [i.e., ambitions and ideals] ... the two poles of the self ... they are the essential constituents of that nuclear tension-arc which, having become independent of the genetic factors that determined its specific shape and content, strives only, once it has been formed, to live out its intrinsic potentialities. (Kohut, 1977: 243)

A person with a strong nuclear self does not randomly cast about for selfobjects suitable to his various needs for self-enhancement; neither is he vulnerable to the attractions of potential selfobjects which he happens to encounter along the way. The nuclear self "tension-arc" (being "pushed" by ambitions and "pulled" by ideals) protects the person from over-involvement with many parts of his own psyche and of the outside world, and limits him to a more or less unique "career." He has become a particular sort of person, with a distinct life-plan aiming at specific self-satisfactions. Within the mainstream of adult life, it is only when the nuclear self "fragments" (partially or more completely) that the person goes off the rails laid down for his life, and pursues desirable selfobjects outside the purview of his nuclear self. While necessary for what India might call the "householder" stage of life, the nuclear self is ultimately limiting, and needs to be transcended towards the end of the life cycle, when the person (ideally) achieves a more universal perspective on his nuclear self and its fate. The development of wisdom in later life depends on a sort of "cosmic narcissism which has transcended the bounds of the individual." (Kohut, 1968; in Ornstein, 1978: 455)

Like Kohut, Winnicott considers it necessary for the "true self" to be protected from the trauma which total immersion in the actual environment would bring. To the extent that the experienced world is felt to be overly out of tune with the self – which must, as the condition of *being* a self, feel that it is the world's creator – the person develops a "false self" structure, i.e., a persona of compliant attunement with the environment. The false self serves two purposes: it pretends to a self-world mutuality which allows a semblance of (superficial) self-feeling, and it protects an inner core of selfhood which cannot at the moment feel creative towards

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the actual environment. This inner core lives a more or less psychotic existence, its "illusory" world being completely cut off from the real one. Although Winnicott confines his discussion of the false self mostly to pathological cases, it would appear that the concept is one which must apply in varying degrees to all persons, since everyone is confronted with frequent traumatic attacks upon his illusions. At the center of Winnicott's highly paradoxical thought is the association of the *true* self with illusion and the *false self* with reality.

Kohut's self-selfobject perspective, at times supplemented by Winnicott's insights, will be used to view three "schools" of Indian philosophical thought in some detail, although others will be touched on in passing. The metaphysical systems chosen are the classical Sāṇkhya (Larson, 1969, 1988; Larson and Bhattacharya, 1987; Hulin, 1978), Rāmānuja's Viśiṣṭdvaita or "identity-in-difference" (Lipner, 1986; van Buitenen, 1953, 1956), and "Kashmiri Śaivism" (Alper, 1979; Sanderson, 1985; Dyczkowski, 1987; Muller-Ortega, 1988). We will find that while the self-selfobject model is useful, and some of its specifics apply well to certain aspects of the Indian philosophies, the model must be significantly modified to fit the data to be considered. In the end our task will be to develop a specifically *Indian* self psychology, one far broader and more encompassing than Kohut's, but which may also prove a useful alternative to the original model in considering Western data.

Sāṅkhya

Larson's early exposition of the doctrines of classical Skhya (1969) has among its other virtues a fine sense of the central paradox or conundrum of the system. The cosmic evolution of the material first principle, *prakṛti*, is understood in Sāṅkhya to occur "for the sake of the *puṛsua*" or spiritual principle (*puruṣārtha*); nevertheless there is no true contact between *puruṣa* and *prakṛti*, and *puruṣa*'s freedom lies in realizing this. As Larson puts it:

> The purpose of the coming together of *prakṛti* and *puruṣa*, and thus of creation ... is twofold. First of all, the process of emergence is for the sake of the enjoyment or contemplation of *puruṣa*. Second, the conjunction or proximity of *prakṛti* and *puruṣa* is for the sake of the liberation of *puruṣa*. (1969: 13).

At the beginning of the cosmic evolution, then, there coexist the two principles: the *puruṣa*, and *prakṛti* in her "root" or primal form (*mūlaprakṛti* or *pradhāna*). Because of the proximity of the *puruṣa*, the *mūlaprakṛti* develops into the "mental" and "physical" constituents of the world

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(*Sāṅkhya Kārikā* 21). There are two reasons for this development: first, to give the *puruṣa* something to see, enjoy or experience, and second in order to bring about realization of the absolute difference between the *puruṣa* and the *prakṛti*.[4] The unity of these two reasons constitutes the central paradox of Sāṅkhya, and will point towards a new type of selfobject relationship.

Let us add a little detail to the picture of Sāṅkhya sketched so far. The primal *prakṛti* evolves first in a "vertical" and then in a "horizontal" manner[5] in becoming transformed into the constituents of persons and their world, collectively termed *tattva-s*. Vertically, the *pradhāna* evolves into the *buddhi* (determining and deciding intellect), then the *buddhi* into the *ahaṁkāra* (personal "I"-sense or "self regard" [*abhimāna*]). Horizontally, the *ahaṁkāra* now becomes simultaneously the "mind" (*manas*), sense faculties (*jñānendriya-s*) and those of action (*karmendriya-s*), and the subtle elements (*tanmātra-s*) which themselves evolve into the gross elements (*mahābhūta-s*). All the *tattva-s* are aspects of the "tripartite process" (Larson, 1987) of the *guṇa-s* (psycho-material constituents),[6] so that *buddhi*, for instance, can be more or less *sattvic* ("good," "pleasurable," or "intelligible"); *rajasic* ("passionate," "active," etc.) or *tamasic* ("heavy," "innert," "dull," "objective," etc.). Within the *buddhi* (and the *ahaṁkāra*, *manas*, *karmendriya-s* and *jñānendriya-s*, which together with the *buddhi* collectively form the *liṅga* or transmigrating entity), the *guṇa-s* bring about various "dispositions" (*bhāva-s*).

In a classic series of papers, van Buitenen (1956b, 1957a, 1957b, 1959, 1964) has shown that many of the classical Sāṅkhyan terms have a prehistory as names for aspects of Vedic cosmogony. *ahaṁkāra* originally meant "utterance of the word aham ('I')", and functioned as the cosmic "self formulation" of a creator god. Other Sāṅkhyan terms such as *bhāva*, *buddhi*, *sattva*, *rajas*, and especially *puruṣa*, also originally occurred in the

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[4] We are purposely setting aside for the moment the question of *whose* realization this is. It is clear, of course, that Sāṅkhya as formulated locates realization in the *buddhi*, but we will see that things are not so clear, and that in the end it is implicit that *puruṣa* also realizes something.

[5] Van Buitenen, 1957a.

[6] The word *guṇa*, as used in Sāṅkhya, is not well translated as "quality," but nothing better is apparent; in Nyāya-Vaiśeṣika, *guṇa* does refer to a "quality" or "attribute" of a real entity (*dravya*). Larson (Larson and Bhattacharya, 1987: 65-73) prefers to discuss the Sāṅkhya *guṇa*-theory as "tripartite process" (*triguṇa*), or as "process materialism;" the point is that the three *guṇas* are not understandable apart from each other, and together constitute a process of transformation (*pariṇāma*).

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context of late-Vedic cosmogonic speculations on the evolution of the Creator, a cosmic Man (named *puruṣa*, etc.). This Man emitted part of himself – often this emission was an utterance – in the form of the world, in order to complete himself. For example he utters the words *bhūr bhuvaḥ svaḥ* ("earth, atmosphere, heaven"), and these three "worlds" come to be (*Maitri Upaniṣad* 6.6, quoted in van Buitenen, 1957a: 57). The cosmos thus emitted is essentially the Creator's body, which had been incomplete or formless without it.[7] Thus the same *Maitri Upaniṣad* text refers to *prajāpateḥ sthāviṣṭhā tanur lokavatī* "The most solid body of Prajāpati consisting of the worlds." As van Buitenen says, "At the beginning of creation a primordial being becomes conscious of himself, formulates himself, creates himself; these three distinctions do not really exist: consciousness-formulation-creation is actually one single process." (1957a: 19)

In the earlier cosmogonies, the creative "I-saying" of emanators such as Prajāpati is (at least in some ways, or at some times) a positive thing; as van Buitenen (1957a, 1979) shows, an original state of emptiness or lack is filled and satisfied when the emanator releases a part of himself which he then enjoys reflexively[8], in the form of food, sons, a wife, wealth etc.[9] It is also clear that the externalized part of the emanator remains in some way *himself*[10]; thus the upaniadic text "He knew: 'I am creation for I have

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[7] Van Buitenen (1957a) marshalls a number of late-Vedic texts which express the original incompleteness of the creator/emanator. One of the most compelling is a story where Death or Hunger (lack personified!) is the creator (*Bṛhadāraṇyaka Upaniṣad* 1.2.1). Death desires a "second self," a son, to fill his hunger; this son is the year. As death opens his mouth to eat this son, he utters the sound "*bhāṅ:*" thus Vāc comes to be. With Vāc as partner Death (now a self, an *ātman*) emits the whole cosmos (*sa tayā Vācā tenātmanedam sarvam asṛjata yad kim ca*). A text shortly follows (BAU 1.4.17) where the *ātman* in the beginning desires to have a wife, children, to be rich, to perform sacrifical work (*karma*); as long as he has not got all of these he feels incomplete (*akṛtsna*).

[8] Winnicott similarly concludes that it is only when one's "creations" are "reflected back" to one by other people that a sense of selfhood can be established (1971: 66).

[9] A long list of desires which are created through the "intention" (*samkalpa*) of one who has "found the self" (*ātāmnam anuvidya*) is located at *Chāndogya Upaniṣad* 8.1.6 – 8.2.10. Desired things which the *ātmavid* "enjoys" (*mahīyate*) include a kingdom (*janapada*), a field (*kṣetra*), the realms (*loka-s*) of the fathers, mothers, brothers, sisters and friends, perfumes, garlands, food and drink, songs and music, and women.

[10] In the Brāhmaṇas, as Gonda (1983) notes, Prajāpati's "creation is a process of emission and exteriorization of some being or object that formed part of, or was hidden in, the creator himself, yet does not become completely independent of him, because Prajāpati, being the totality (*sarva*) embraces his creatures ... The creator god is 'identical' with, that is immanent, inherent in, his creation."

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created all this.' That is how creation came to be ... He entered into this here [the manifest world] down to the nail-tops" (*Bṛhadāraṇyaka Upaniṣad* 1.4.5-7). From Prajāpati's perspective, it is because the world is originally the result of "I-ness" that it continues to be "mine."[11] The narcissistic, selfobject bond of "creator" and "creation" continues even after they appear to be separated by the act of world emission.[12]

In the *Mokṣadharma* section of the *Mahābhārata*, this old theory of self-creation/self-formulation was reinterpreted as occuring through the influence on the *puruṣa* (or his *buddhi*) of the *bhāva-s*, still understood on a cosmic level (van Buitenen, 1956b). The evolution of *prakṛti* in classical Sāṅkhya, van Buitenen believes, is a further reinterpretation of these old cosmogonic ideas, which continue to resonate beneath the surface of the theory. The new ideas, however, understand self-emanation soteriologically, and strive (on the surface) to isolate the *puruṣa* (the cosmic man's reflex at the level of individual persons) from the suffering which prakṛtic evolution brings about.

Within the Sāṅkhyan system it would appear that the old relationship between the emanator and the cosmos is maintained in the "parental" bond between the root *prakṛti* and *buddhi*, *buddhi* and *ahaṁkāra*, and *ahaṁkāra* and the remaining *tattva-s*. As van Buitenen (1957a) shows, the centrality of *ahaṁkāra* at the origin of "horizontal" creation is likely the result of the old role of "I-ness" in cosmogenesis; in *Sāṅkhya*, however, this I-ness is depreciated, and enlightenment arises only after it is seen through. In fact, *ahaṁkāra* is not a genuine subjectivity at all in Sāṅkhya, but only a "presumption" (*abhimāna*) which must be discriminated from the real thing (i.e. *puruṣa*) by the *buddhi*. The necessity of this determination of *ahaṁkāra* as only an "imposter" self – *not* the true self (which is the *puruṣa*) – would adequately explain the placement of *buddhi* above *ahaṁkāra* in the Sāṅkhyan emanational sequence.[13]

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[11] In the Indian texts as also in Winnicott it is clear that the self in its "I-ness" preceeds its manifestations. Winnicott (1971: 65) discusses this in terms of a "resting state out of which a creative reaching-out can take place," which sounds quite similar to Viṣṇu's pre-cosmic state, lying asleep on the Waters.

[12] The relationship of creativity and I-ness was at the center of Winnicott's late thought. He describes their unity in a "highly specialized" situation such as psychotherapy, when a person has the experience "I AM, I am alive, I am myself. From this position everything is creative." (1971: 66).

[13] The *buddhi* thus has an "ascending" and a "descending" mode: descending into greater and greater involvement with gross "downstream" evolutes, ascending towards discriminating awareness of the *puruṣa-prakṛti* difference. Descending *buddhi* is characterized as "*tamasic*," ascending *buddhi* as "*sattvic*" (*kārikā* 23; Larson 1969: 198-199). The opposition is referred to

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But the *puruṣa* of classical Sāṅkhya, while in many ways a conscious self,[14] apparently has no selfobjects. A metaphor illustrates the nature of the *puruṣa*'s experience: it is like a piece of rock crystal within which is seen the image of a flower (Hulin, 1978: 154). There appears to be a relationship of physical containment of the flower by the crystal, but actually there is no contact between them. Likewise the activities of the *tattva*-s, and especially the *ahaṁkāra*'s pretence of I-ness, appear within the crystalline awareness of the *puruṣa* but do not affect that awareness, and cannot constitute selfobjects for it.

How did the old self-selfobject relationship between emanator god and world become soured to the point of denying the selfhood of the *ahaṁkāra* and depriving the *puruṣa* of selfobjects? No doubt Larson (1988) is correct in detecting Buddhist influence, but we have seen earlier that disappointment and suffering were already inherent in the partly "asuric" nature of the self-selfobject relationship in the Vedic period.[15] It is the nature of selfobjects not to be content to remain only in the service of the self whom they complete, satisfy or mirror. Instead, selfobjects seek their own selfhood, and desert their "masters," leaving them to fall apart and die; thus "good" selfobjects become what we can call "bad" or frustrating ones.[16] This seems to be Skhya's unexpressed reason for splitting off

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elsewhere under the rubrics *pravṛtti* ("evolution") and *nivṛtti* ("involution").

[14] It is true that the *puruṣa* is not called a "self" in Sāṅkhya. Nevertheless it is clear that it is a self in effect. Historically, as we have discussed, *puruṣa* is a name for the Cosmic Man, and his self-mythology is implied in the early forms of Sāṅkhya analyzed by van Buitenen (1956b, 1957a, 1957b) and Johnson (1937). In classical Sāṅkhya the *puruṣa* has at least five traits of a self: its nature is consciousness; it is the only true experiencer and enjoyer (*bhuj*-); it is the ultimate motivational principle in the person (that for the sake of which); it organizes life around *one* overarching motive: the need for liberation; and it is the "possessor" (Larson and Bhattacharya, 1987: 95, 99) of the psycho-physical, prakṛtic entity which the person is. It is the basic thesis of this discussion of Sāṅkhya that the system has developed into its present form through the attempt to separate the self into a witnessing part (*sākṣin*, *puruṣa*) and an "object hungry" part (*ahaṁkāra*). In spite of Sāṅkhya's efforts, however, it is clear that *puruṣa* is implicitly much more than a mere witness.

[15] van Buitenen does not discuss the fragmentation, depletion, and loss of energy undergone by the creator/emanator in the course of emitting the cosmos. For example, at *Śatapatha Brāhmaṇa* 6.1.2.17-19 Prajāpati "falls apart" (*vi srams*) into the five body constituents, the five seasons, and the five regions; Agni, via the fire altar (the parts of which are homologous to the parts of Prajāpati), then puts him back together. The theme is ubiquitous in the Brāhmaṇas.

[16] Kohut does not discuss the concept of "bad" selfobject as such, but does frequently talk of a "traumatic" lack of mirroring by the selfobject, etc. In his paper on aggression he speaks of a "narcissistically vulnerable" person becoming enraged in such a situation; the person experiences one who opposes him not as "an autonomous source of impulsions," but "as a

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puruṣa from *ahaṁkāra*: selfhood mired in the suffering caused by "decay and death" (or otherwise by the predominance in the lower sectors of the cosmos of the *rajas* and *tamas guṇa-s*) is located in the *ahaṁkāra*, while the *puruṣa* hovers above all, an objectless self.[17]

But things are not so simple. Strangely – if there were no true *praktṛi-puruṣa* contact – the *Sāṅkhya Kārikā* states that the *buddhi* and the "downstream" *tattvas* function for the sake of the "enjoyment" (root *bhuj-*) of the *puruṣa* (*Kārikās* 17, 37)[18]. This would seem to imply that *buddhi*, etc. are, after all, selfobjects for the *puruṣa*. Furthermore, the nature of purua's enjoyments seems to contradict the "threefold suffering" which the *tattva-s* are held to entail (*Kārikā* 1); the *Kārikā* provides several metaphors which suggest the character of this *prakṛti*-caused "enjoyment." It is like a

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flaw in a narcissistically perceived reality. The enemy is a recalcitrant part of an expanded self over which the narcissistically vulnerable person had expected to exercise full control. The mere fact ... that the other person is independent or different is experienced as offensive...." (Kohut, 1978, 644; emphasis in text) A "bad" selfobject, then, is one which (who) refuses to act as a narcissistically supportive adjunct of the self, but insists on its (his/her) own independent reality. This independent existence, however, is not felt simply as independence by the narcisistically vulnerable person: rather the bad selfobject is experienced as attacking and trying to usurp the person's own selfhood. The result is likely to be a "life or death" struggle quite out of proportion to the magnitude of the initial obstacle. The recent California "highway murders" may offer an illustration of the phenomenon. It is clear that the struggle is between feeling enhanced by the selfobject (when the selfobject is "good") and feeling one's own selfhood being used (abused) to enhance the selfhood of the (bad) selfobject. Thus the obsessive interest of the narcissistically offended party in the offender, who becomes a sort of "negatively idealized" sadistic selfobject, possessing the omnipotence of all idealized selfobjects, but using this to diminish one's selfhood rather than to expand it. (cf Kohut, 1978: 643n)

[17] For "splitting" of the self (or self representation) as a defensive maneuver, cf. Kohut, 1977: 207-213; Kernberg, 1975: 25-29. For Kohut, ("vertical") splitting preserves a sense of grandiose self esteem (on one side of the "split") by separating memories and experiences of selfobject satisfaction from traumatic, unsatisfying ones (which are assigned to the other side of the split).

[18] In translating the root *bhuj-* as "enjoyment" I am following Larson's earlier work (1969); in 1987 (Larson and Bhattacharya) he translates *bhuj-* more neutrally (or bloodlessly) as "experience." The change, I believe, is a symptom of Larson's general effort in his recent writings to minimize the "personal" qualities of the *puruṣa*. The effort seems to parallel the historical development of the *Sāṅkhya* doctrine itself, but is, I believe, wrong-headed. It is intuitively clear what would be meant by *prakṛti* functioning for the sake of *puruṣa's* "enjoyment," and metaphors such as *prakṛti* dancing for *puruṣa* (*kārikā* 59) only make sense if the intent is to "please" him in some way. But why should anyone seek, or seek to give, mere "experience" if there is nothing enjoyable or pleasurable in it? By neutralizing *bhuj-* Larson destroys the sense of *prakṛti's* "selfless" work on *puruṣa's* behalf: her aim is, after all, *puruṣa's* ultimate enjoyment of liberation.

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dancing girl performing for an observer (*Kārikā-s* 59-61), like milk flowing spontaneously from a cow for the sake of her calf (57), and like a man acting in order to achieve the satisfaction of a desire (58). These images do not seem entirely parallel, because the cow's yielding of milk for her calf is unconscious, while the dancing girl and man acting are aware of their aims. Actually, for Sāṅkhya, *all* are unconscious within the prakṛtic level. This is shocking to *ahaṁkāra* sensibility in the case of the dancer and the man acting: each thinks that "I [*ahaṁkāra*] act," but actually each only acts for the sake of the I [*puruṣa*] which watches. Nevertheless, the *prursa*'s enjoyment is the aim of their actions.

The difference between this and a selfobject relationship of the older, Vedic type would seem to be that for the Sāṅkhya the objects which function for the sake of the *puruṣa*-self did not themselves evolve from the *puruṣa*'s I-ness and so cannot cause it to suffer. Nevertheless, there does seem to be a way in which the *tattva*-s are genuinely selfobjects for the *puruṣa*, but what we will call negative selfobjects rather than positive ones.[19]

We have seen that a self's experience of selfobjects can be either satisfying or aversive, depending on whether the selfobjects are "good" or "bad," i.e., whether they are experienced as furthering the self's desires or denying them by seeking their *own* ends. In Sāṅkhya the "badness" of the selfobject seems to be emphasized. But when the *buddhi* "sees through" the false selfhood of the ahaṁkāric person, it shows the *puruṣa* that there is no selfhood in the selfobject.

To understand this more clearly, let us consider what it is that the *puruṣa* sees. After the *mūlaprakṛti* has emanated the ahamkaric cosmos, the *puruṣa* sees what looks like a self-selfobject relationship, one, as we have seen, of suffering. This seems odd: a self experiencing a self-selfobject connection. Perhaps, however, if the self in this strange state of affairs has a selfobject connection with the whole suffering relationship it may make sense. That is, the "observing" self may learn something about itself from the suffering displayed before its eyes. In the Sāṅkhya, it learns that it (the *puruṣa*-self) is not the suffering it experiences; the self is shown by the

[19] The term "negative" selfobject was suggested by psychological learning theory, where a "negative reinforcement" is one which removes a noxious stimulus, terminates punishment, etc.; it is thus *positive* in its effects, from the point of view of a suffering person. Likewise the negative selfobject is one which removes or breaks the narcissistic tie between the self and a "bad" or noxious selfobject, i.e., one which diminishes or attacks the sense of "I-ness" or self esteem.

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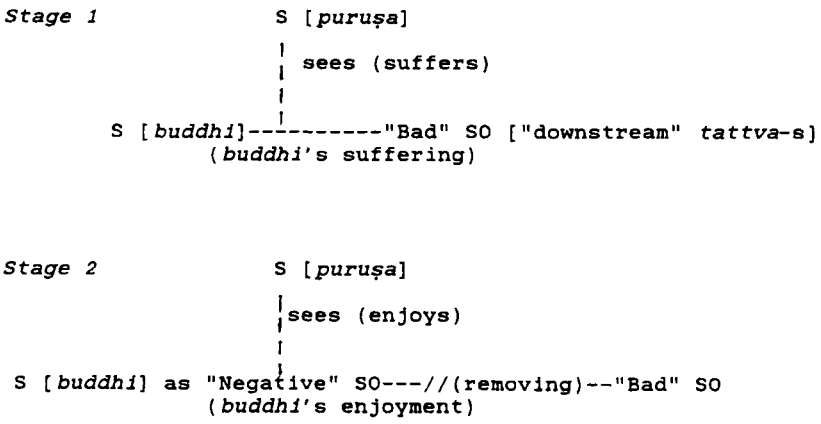
negative selfobject that the selfobject is *not* (as it appeared) the self.[20]

Paradoxically, the self of whom this is demonstrated is an object self, the *buddhi*. Diagrammatically (with S standing for self, SO for selfobject and dashes for their relationship):



What was suffering becomes "enjoyment" for both the *buddhi* and the *puruṣa* when the former, and simultaneously the latter, realize that the suffering does not belong to "self" (the *jñāna bhāva* in the *buddhi* or the *puruṣa*) but to the selfobject, which ceases through this realization to be (or seem to be) a selfobject at all.

A negative selfobject, however, remains a *selfobject* because in showing the self what it is not it provides an essential service to the self, which thereby discovers its true existence. The negative selfobject points to the self by showing what the self is not; i.e., the self is not encumbered with

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[20] Perhaps the relationship between *prakṛti* as negative selfobject and *puruṣa* as self can be understood as an example of the Nyāya-Vaiśeṣika logical category of "absence" (*abhāva*); i.e., *prakṛti* is an "absence" of self. As Potter (1977: 144) points out, "every absence is the absence of some positive entity which does have a *svarūpa* ["own-nature"]. This positive thing is the absence's "counterpositive" (*pratiyogi*)." *Puruṣa* would be *prakṛti's pratiyogi*. Larson (1980: 309) in fact says just this, adding that there is a "*reciprocal* non-existence [absence]" between *puruṣa* and *prakṛti* (my emphasis).

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bad selfobjects and suffering. As Larson (1969: 191) says, "*puruṣa* ... must become what it is not in order ultimately to become what it is."[21] What puruṣa "is not" is the *buddhi* in its role as suffering *ahaṁkāra* self immersed in the bad selfobjects of the lower *tattva-s*. What *puruṣa* "is" is *buddhi* informed by the *jñāna bhāva*, i.e., *buddhi* as negative selfobject "determining" the non-selfhood of both the lower *tattva-s* and itself. It is clear here that Larson's formulation needs to be modified, since the *puruṣa* cannot truly be said to *become* either the ahaṁkāra *buddhi* or the *jñāna bhāva*-filled *buddhi*. His idea can be better expressed in the following sentence: *puruṣa* must see what it is not in order to see what it is. But even here we must add that it is actually the *buddhi* in which the *puruṣa* sees itself, as bound and as unbound.

Let us look more closely at the *buddhi*'s role as negative selfobject. Because it contains the *bhāva*-s, the *buddhi* is "the source of [man's] fundamental strivings or urges" (Larson, 1969: 183). But the ultimate, overriding and guiding aim of all these strivings is the enjoyment and salvation of the purua.[22] It is because of the presence of the *puruṣa* that the *buddhi* evolves via the *bhāva-s* into persons with narcissism (*ahaṁkāra*), senses, mind, desires, etc. But what is the "message" sent to the observing *puruṣa* by the dance of the *prakṛti*? It is that "I am not; nothing belongs to me; I do not exist" (*nāsmi na me nāham, kārikā* 64)[23]. It is clear that this

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[21] Negative selfobjects are examples of Marriott's (1989) "unmatching:" in taking away what is not appropriate to oneself one becomes more congruent with what one is.

[22] The fundamental desire to be free of the "bad" selfobject, and the possibility of a negative selfobject, are quite clearly evident in the first half of *kārikā* 1: *duḥkhatrayābhighāṭāj jijñāsā tadapaghāṭake hetau*, "Because of the torment of the threefold suffering (there arises) the desire to know the means of removing it" (Larson's translation, 1969: 257). The same root, *ghāṭ-*, is used to describe the "onslaught" (*abhighāṭa*) of the "threefold suffering" – i.e. the "bad" selfobject – and the means of removing that suffering (*apaghāṭa*), the negative selfobject. It is the *buddhi* which "desires to know" (*jijñāsā*) the means of removing the *duḥkhatraya*; this sattvic desire indicates that the *buddhi* is already on the way towards getting rid of suffering: desire for knowledge is the beginning of wisdom (*jñāna*).

[23] Larson's 1969 (279) translation. His 1987 translation adds an unexpressed "conscious" to the "I am not." This is suggestive with respect to the *na me* phrase, which becomes "(consciousness) is not in me." However there is more to *nāsmi* and *nāham* than "I am not (conscious)" and "the 'I' is not (conscious)." The metaphor of the "shy virgin" withdrawing from her lover's gaze and the *pradhāna's vinivṛtti* (*kārikā* 68) indicate that what is in question is a self-negation, a ceasing to be present on *prakṛti's* part, not merely a ceasing to be (seem) conscious. I suggest that the phrase *nāsmi nāham na me* may negatively echo Upaniṣadic *ādeśas* such as so *'ham asmi* and *aham vāva sṛṣṭir* (van Buitenen, 1957a: 17); that is, the Creator's self-formulation as the world, which was formerly a matter for celebration, has in Sāṅkhya become an "unsaying." But just as the original "I"-saying involved a selfobject

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realization is that of the discriminating *buddhi*, operating in *jñāna* ("ascending") mode. The enjoyment of the realization, however, is the *puruṣa*'s.

To return to the dancer-spectator metaphor:

> It is my thought that there is nothing more maidenly (shy) than the *prakṛti*, who says 'I have been seen' and never again comes into the sight of *puruṣa* (Kārikā 61).

The *prakṛti* as negative selfobject appears in order to be seen as "not I" and disappear, leaving behind a *puruṣa* who now – we may infer – knows himself as "I;" without her dance he could not know this[24]. Perhaps we may take the matter one step further: in disappearing the *prakṛti* denies her I-ness, but the denial of I-ness is itself tantamount to disappearance. That is, the Sāṅkhya ideal of *kaivalya* or "isolation" as *puruṣa*'s ultimate state need not be taken too literally as a condition without *prakṛti*.[25] Rather, it can be seen as a state in which prakti's "not I-ness" is atemporally realized, and the self exists in blissful (if paradoxical) relatedness to its negative selfobject. Sāṅkhya itself, however, while it entertains such an idea regarding the enlightened *puruṣa* during life (*kārikā*-s 55-56), claims that after death the *puruṣa* does literally separate from the body and attain "isolation" (*kārikā* 58). It is not clear how the post-death *puruṣa* could continue to realize its ongoing I-ness without the negative selfobject provided by the *prakṛti*. Perhaps we have discovered here a connection between *puruṣa* and *prakṛti* "unconscious" to Sāṅkhya as formulated, although implied by it. We can interpret Sāṅkhya's "conscious" understanding as "diachronic" (there is movement from bondage to release) while we are proposing a "synchronic" reading of the same idea (release is timeless).[26]

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function, so does "not I"-saying.

[24] "It is only the fact of the world which renders *puruṣa* aware of itself." (Larson 1969: 186).

[25] The jñāna which is expressed in *prakṛti's* "I am not" is itself characterized (*kārikā* 64) as *kevala* ("solitary" in Larson, 1969: 279, and "not mixed with any other thing" in Larson and Bhattacarya, 1987). We may interpret that *prakṛti* participates in *puruṣa's kaivalya* (*kārikā* 68) when she says "I am not," i.e., when she undergoes *nivṛtti* (involution) and *pralaya* (dissolution: *kārikā* 69).

[26] This ontological use of the terms "diachronic" and "synchronic" differs somewhat from their function in the work of Levi-Strauss (1963), from whom they were taken.

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Insight

It may be instructive to compare psychoanalytic *insight* to the discriminating *buddhi* as forms of practice. In realizing through psychotherapy that one's life has been a manifold enactment of the oedipus complex, for example, one also gains distance from the oedipal issues (achieves an "observing ego"), and gradually develops a conflict-free "ego" sphere (including, for example, a measure of freedom of choice *vis-à-vis* one's aggression towards father figures). A major "metapsychological" issue within psychoanalysis has been whether (as Hartmann, 1964, proposed) there exists an ego realm innately separate from the id, or whether all ego energy and functions (including insight) derive from the instincts. For Sāṅkhya, the latter (classical psychoanalytic) position would be correct; that is, the *buddhi* is a part of *prakṛti*, and not of independent origin, even though it gains distance from (the rest of) *prakṛti* and treats it as "other." Unlike psychoanalysis, however, Sāṅkhya contains a second principle, the *puruṣa*, which motivates the sublimation of "instinct" (lower *tattva-s*) into "ego energy" (ascending buddhi).[27] Lacking this, psychoanalysis flounders, variously deriving the ego energies from the instinct of self preservation, the perceptual faculties and "reality principle," etc. Hartmann's "ego psychology" (as already in Freud's early "ego instinct" theory: Freud, 1914) also posits a second principle, but one on the same level as the instincts rather than above them (as in Sāṅkhya). Thus one kind of energy interacts with the other, and the ego as it were tames or "neutralizes" the libidinal and aggressive instincts (cf Greenberg and Mitchell, 1983: 258-262).

In Sāṅkhya the second principle, the *puruṣa*, seems rather to "inspire" the instinctual *prakṛti* to develop the *buddhi*'s discrimination. Insight develops naturally within the instinctual realm for the purpose of showing the *puruṣa* that it is not tied to the instincts.[28] There is no conflict, no

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[27] This motivating, "final cause" principle bears a resemblance to Kohut's "idealizing" selfobject; the *prakṛti* "finds itself," as it were, by becoming like, and partially merging with the *puruṣa*. The similarity is clear, but limited by *Sāṅkhya*'s refusal to allow any real selfobject relationship between *puruṣa* and *prakṛti*; we have seen that such a relationship persists, but in a "negative" form. Perhaps we may interpret that the *puruṣa's* nature as a witness (skin) is what allows the *buddhi* to develop an "observing ego" which can see the lower *tattva-s* as "other." In Jungian psychology the final cause is present in the *symbol*. It is through the symbol that the instincts are "transformed": drawn beyond themselves and towards the Self (the word is generally capitalized in the English translations of Jung). Thus "Psychic development cannot be accomplished by intention and will alone; it needs the attraction of the symbol...." (Jung, 1960: 25).

[28] We will take up again the question *who* has the ultimate realization. If the motive for

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"dynamics" in the Sāṅkhyan model as there must be when, as in ego psychology, the instincts have within themselves no capacity for sublimation.[29]

This analysis suggests that Kohut's self psychology (at least in an "ideal" form) is in some respects closer to Sāṅkhyan than to ego psychology or classical psychoanalysis. In Kohut, from the beginning of life the instincts are seen by the parent, and so in time by the child herself, as part of the child's whole self, and get "woven into" that self rather than struggling towards an "adaptation" (Hartman, 1964) with it. There is no inherent conflict between self and instinct, and ideally no dymamics, no need to "neutralize" instinctual energies.[30] In actual life, however, when the self lacks adequate selfobject support and is excessively frustrated, a kind of self-instinct conflict does arise. For example, when the instinctual oedipal strivings are not mirrored by parental selfobjects as natural and admirable, and are excessively frustrated, the child's psyche rejects them and a "split" between self and instinct occurs.[31] Perhaps this divided state is the point

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the radical separation of the *puruṣa* and *ahaṁkāra* selves is, as we have posited, the need to protect at least one part of the self from the "badness" (*duḥkha*) of ordinary reality, it is questionable whether this can be achieved without the *puruṣa* himself realizing (joyfully) his freedom from *duḥkha*. In Patāñjali Yoga the salvific realization is called *vivekaja jñāna*, "insight born of discrimination (between *puruṣa* and *prakṛti*)" (*Yoga Sūtra* 3.54), which makes it clear that the realization is in some way more than simply the discrimination per se. It is furthermore specified at *Yoga Sūtra* 3.54 that *vivekaja jñāna* involves a timeless or "synchronic" (*akrama*) vision of the psyche and cosmos (*sarvaviṣayam sarvathāviṣayam*), and that it brings about a "crossing" (*taraka*). We may suggest that the "crossing" here is from one side to the other of the *puruṣa-prakṛti* discrimination, and implicitly refers to the *puruṣa's* "move" from seeing objects (i.e., from *duḥkha*) to seeing himself, something which would echo the many Upaniṣadic utterances of the form *hantāham*!, "Behold I!" (van Buitenen, 1957a). Of course, as we have seen, "conscious" Sāṅkhya denies that it is the purua who realizes his I-ness; rather it is the *buddhi* who realizes it "for" (*puruṣārtha*) him. The effort to prevent contamination of *puruṣa's* pure selfhood is, ironically, self-defeating: realization of selfhood is impossible without an appropriate selfobject; one realizes the self "through" the selfobject, even though oneself alone can do the realizing. If it is the *puruṣa* who realizes, then the negative selfobject function of the *puruṣa-prakṛti* discrimination may be named by the word *taraka*, the act of making the *puruṣa* "cross over" from exile in *prakṛti* back to his own self-established, -formed and -powered reality (*svarūapratiṣṭhā vā citiśāktir, Yoga Sūtra* 4.34)

[29] Thus in the example cited earlier the calf does not *compel* the cow to give milk.

[30] This ultimate lack of conflict seems somehow inconsistent with the fact that life is a "threefold suffering." It is only looking at life "synchronically," or *sub specie eternitatis* that it becomes clear that what *prakṛti* is really doing is merely dancing to reflect *puruṣa* to himself.

[31] Note that for Kohut (1977: 213, etc.) this is a "horizontal" rather than an "vertical" split. The older psychoanalytic concept of repression (and allied defense mechanisms) is associated with "horizontal" splits between ego (self, for Kohut) and repressed instincts;

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of departure for Sāṅkhya also, with its essentially practical (soteriological – or therapeutic?) intent. In Kohutian psychotherapy there is no necessary struggle between self and instinct, and therapy takes the form of repairing developmental arrests and providing "compensatory" experiences and structures; so in Sāṅkhya, too, a kind of developmental arrest is to be overcome, and a natural "healing" process unleashed.[32]

What then is the role of insight for Kohut, and what is realized? In Kohutian terms, Sāṅkhya would suggest that insight takes the form, "we (the partial instincts) do not really exist as such; only you, the I-self, exist really." In Kohut that might be modified to read "we instincts do not exist on our own, separate from you, the I-self; we are part of you."[33] Insight, then, would heal the split, and reintegrate the split-off instincts, etc. into the self.

The problem we found at the heart of Sāṅkhya was that the *puruṣa* is said to remain isolated from the *prakṛti* before and after realization (insight).[34] We attempted to resolve this difficulty by positing the concept

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"vertical" splits are between two states of the self. We will find that this distinction is less pertinent in an Indian context, since instincts themselves can be viewed as (internal) selfobjects, as can alternative self states.

[32] We may suggest that the "developmental arrest" for Sāṅkhya also results from the presence of selfobject "frustration" (here accepting Larson's later translation of the term *duḥkha*). In the nature of the "tripartite process" of the *guṇa-s* is an opposition between the attainment of satisfaction of desires and their frustration. The *guṇa rajas* is associated with desire, *sattva* with satisfaction, and *tamas* with frustration (Larson, in Larson and Bhattacharya, 1987: 66-67). "Satisfaction," however, is not simply satisfaction of a particular desire; Larson translates *sattva* as "reflective discernment," which brings to mind the ultimate reflective discernment of *prakṛti*'s "not I"-ness. *Sattva* thus implies understanding, or at least a sense of understanding, the world. Likewise, *tamas* is not just the frustration of a desire but the sheer irrelevance of much of the cosmos to all our interests and desires, its bewildering opacity and "heaviness" (*gurutva*). From the selfobject perspective *tamas* seems to represent the refusal of the selfobject to mirror the needs of the self, while *sattva* represents a successful selfobject experience, in which the selfobject does reflect the self to itself (this is why it is pleasurable). At the heart of the tripartite process, then, we see the same "contradiction" we found in the Brāhmaṇas: the creative Prajāpati falls apart into the recalcitrant entities of the world, but is reconstituted via the sacrifice (and especially the sacrificial fire, Agni) when the world entities are rearranged in the form of Prajāpati's body (i.e., in an "understandable," sattvic pattern).

[33] The "idealizing" or merging quality here is obvious, but also evident is a "mirroring" of the *puruṣa* by *prakṛti*. The negative selfobject bears some similarity to both, differing in its ultimate self-abnegation.

[34] But note that Sāṅkhya compares the *puruṣa-prakṛti* relation to that of a king and his servant (e.g., Larson and Bhattacharya, 1987: 186). This is quite similar to the Kartā-family relationship in Inden and Nicholas (1977), where the family members serve the Kartā and

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of a "negative selfobject," i.e., one which shows the self to itself by showing that it (the self) is not certain other "bad," traumatically frustrating selfobjects. But by finding in this way a genuine relationship between *puruṣa* and *prakṛti*, albeit a negative one, we undermine their ultimate isolation from one another, and repair the "split" between them. Insight leads to a separation, but one which is (unconsciously to Sāṅkhya[35]) a reunion.

In Kohutian therapy, too, there is a way in which insight can be seen to lead to a "healing" separation between self and selfobject, and to involve a negative selfobject function. Although Kohut limits selfobjects to what Westerners would call "outside" entities such as parents, etc., the Sāṅkhya perspective finds no essential difference between "internal" entities such as the *buddhi* and "external" ones such as sense objects and the "material" world. They are all external to the self. Applying this viewpoint to Kohut's theory, a split-off instinct or other part of the psyche could be viewed as a "bad" selfobject.[36]

Such bad ("internal") selfobjects by their very nature would possess a heightened sense of "independent" selfhood. That is, in "refusing" to be (good) selfobjects, the split-off bad objects assume selfhood of their own.

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participate in his selfhood, or the *jajmāni* relationship where the "service castes" participate in the *jajman's* self. Even the Sāṅkhya Kārikā states that the *prakṛti* needs the *puruṣa* as an *adhiṣṭhāna* or "standing place, basis" (*kārikā* 17), which Larson interprets as implying an "overseeing," unifying function (Larson and Bhattacharya, 1987: 156).

[35] Our positing of "unconscious" implications of the Skhyan doctrine can be put into perspective by Potter's (1980: 241-242) remarks on *interpretation*: "An interpretation... is an attempt to reconstruct what must be assumed to be working in the minds of a person or persons in order to understand or explain their behavior and thought." It is clear in Potter's example that these "workings" in the mind need not be the object of explicit awareness; we will see that Sāṅkhya's unawareness of *puruṣa's* implicit need for *prakṛti* is not just adventitious but is motivated. If *puruṣa* were admitted to require *prakṛti* as a selfobject, then *puruṣa* would become vulnerable to *prakṛti's* suffering; avoiding this is the essential motive for separating them absolutely in the first place.

[36] Recall the quotation from Kohut and Wolf (1978) cited earlier: the self experiences control over selfobjects in the same way as a person feels in control of his own body and mind. There is thus no great leap involved in understanding body and mind as selfobjects, which can be "bad" in the same way as "external" selfobjects when they fail to enhance the self. More evidence for this idea can be found in Kohut's thoughts on narcissistic rage.

The experience of having one's mind, body and feelings perform in ways which contradict the intentions of the nuclear self is experienced as highly threatening to self esteem and the sense of cohesiveness. Kohut (1977: 636-43) gives the examples of brain-injured persons enraged at being unable to find the name of a familiar object, persons in psychoanalysis chagrined at finding unacceptable feelings within themselves, and the shame of a public speaker over a slip of the tongue.

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This seems to be what happens in more drastic form when the self "fragments" and instincts, etc. gain partial autonomy as "breakdown products." Paradoxically, in being not-self, the split-off ("internal") selfobject becomes even more self, but now a self other than the primary, nuclear one. To this would correspond the common perception that symptoms such as compulsions, etc. are simultaneously felt to be "not mine" (out of my control, etc.) but also intensely "mine" (something that "I" must and desire to do). Insight would seem to be the realization that the selfhood of the symptom, split-off instinct, etc. does not threaten my (nuclear) selfhood; there is a denial or negation of the tie to the narcissistically cathected "enemy." Thus insight separates (nuclear) self from (bad) selfobject.[37]

Let us look again at the other side of insight, how it can bring about reintegration of the split-off "self" elements with the nuclear self; we will again use oedipal strivings as an example of a rejected part of the self. After the realization that oedipal wishes are "not I" (as opposed to rejecting but continuing to obsess about them because they are "bad"), what becomes of these wishes? If, *contra* Sāṅkhya's explicit position, they do not disappear but merely lose their sense of independent (but competitive) I-ness, it would seem that the only possibility is that they must become "woven into" a modified nuclear self structure, and so become not (independently) "I" but still "mine." This would involve alterations in the form and strength of the oedipal wishes, but also changes in the nuclear self. In Sāṅkhya, the independent selfness of the *prakṛtic* evolutes (i.e., their *ahaṁkāra*) is dissolved, and they exist only as a negative selfobject for the *puruṣa*, and as such are "woven into" the *puruṣa*'s self structure. A major difference is that in Kohut the newly integrated oedipal strivings can become part of the self's creative goal-setting (ambitions and ideals), and so of its future. The *prakṛti* has no future in the Sāṅkhya except eternally to signify to the purua its selfhood as uncontaminated by the "threefold sorrow," something which we have suggested is a source of unbroken enjoyment for the *puruṣa*.

[37] This provides an insight into the Kleinian idea of "projective identification" (Segal, 1964): the part of the self – or psyche – which is projected into the other person is essentially a failed selfobject. This is why it becomes even more of a narcissistic threat after being put into the other.

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MARRIAGE PRESTATIONS AMONG THE RAJPUTS OF THE KUMAON HIMALAYAS

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This paper will examine the changing patterns of marriage and marriage prestations among the Rajputs of the Himalayan region of Kumaon. Fieldwork on which this paper is partially based was conducted in PakhuRa,[1] a Kumaoni village in Uttar Pradesh, India about eighty-five road miles west of Nepal, sixty-three road miles north of the Indian plains and about six trail miles northwest of Almora, the district capital. The high caste Ksatriya Rajputs are the numerically dominant *jati* in Kumaon (about fifty percent) and constituted about eighty per cent of PakhuRa in 1987. PakhuRa Rajputs, as nearly all of the Rajputs in rural Kumaon, formerly were known as Khas-Rajputs, Khasiya or Khasiya and probably had Sudra rank. But, as these are terms of derision and insult today, I will avoid using them henceforth. Further, these PakhuRa Rajputs, as well as the majority of Kumaoni Rajputs, are not to be confused with the few remaining higher-ranking Thuljat Rajputs in the region. The latter are descended largely from the plains and from the royal families of the ancient Kumaoni *rajas* (e.g., Chand, Katyuri, Mankoti, etc., see Sanwal: 1976 and Fanger 1980).

Although Rajputs make their living primarily by the cultivation of terraced fields, most households supplement their agricultural income with cash earned from employment outside the village. As we will see, this external employment is an important factor in the changing pattern of marriage prestations.

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[1] Initial fieldwork was conducted in 1966-67 under the auspices of a grant from the Fulbright Foundation and the United States Educational Foundation in India. Return visits to PakhuRa and Kumaon were made in December, 1981, January, 1982 and for five months in 1986-87. This research was partially funded by the Kutztown University of Pennsylvania Research Committee and the Department of Anthropology and Sociology. This paper is a revised and updated version of an article that was published in India in 1987 (See Fanger: 1987).

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Marriage Prestation in the Indian Context

The question of brideprice (or bridewealth) has long fascinated anthropologists; yet, until recently, most discussions of the topic have been confined to the continent of Africa (Tambiah 1989:413-435). Moreover, the considerable interest in brideprice has not nourished a parallel concern with dowry. While this lack of interest may reflect the relative infrequency of dowry in most non-western societies, this situation does not apply to India. Until Tambiah's seminal essay (1973:59-169), there had been very little theoretical attention focused on this subject for India. Hopefully, this article will help fill the gap, especially as it relates to the Kumaoni area.

Both brideprice and dowry involve the transmission of property at marriage. In the case of dowry, the kin of the bride provide her with property "... as a type of pre-mortem inheritance..." (Goody 1973:1). Technically, this property is under the wife's control, although her husband may have the right to manage it. According to Tambiah:

> A husband cannot transfer the dowry to his sister, partly because he requires his wife's consent, but more importantly because it is against the spirit of the dowry institution, which is that the dowry given a wife and in her legal possession should form part of the conjugal estate, to be enjoyed by husband and wife and to be transmitted in time to their children (1973:621).[2]

Brideprice, by contrast, is a transaction in which property passes from the kin of the groom to the kin of the bride. I want to emphasize the kin of the bride rather than the bride herself. Brideprice can be distinguished from what Goody has called "indirect dowry" by which he means "... marriage prestations (that) are made by the groom or his kin... (in which) the ultimate recipient of these gifts is the bride and not her kin" (1973:2). While I find Goody's distinction between "indirect dowry" and bridewealth useful, I consider his phrase, "indirect dowry", to be inappropriate. As the wealth and gifts are given by the groom's family, the term dowry is inconsistent, Barbara Miller (personal communication, 1980) suggested to

[2] Tambiah is expressing here the ideal principles of dowry; in practice, a husband or his family may be able to appropriate a wife's dowry for use by other family members (e.g., the husband's sister or niece). However, this usually would be done secretly and is a violation of the principle of the institution.

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me the phrase "diverted bridewealth". I prefer this, as it reflects more accurately the direction of these prestations, This distinction is particularly relevant to marriage transactions in India, and, as we shall see, for Kumaon. While many ethnographers of marriage payments in India have described prestations from the groom's side to the bride's side,[3] these gifts often end up as "diverted bridewealth" rather than brideprice. According to Tambiah, because brideprice payments in India are considered degrading and immoral, they are "... under pressure to be converted back into dowry..." (1973:71). It is apparent from Tambiah's analysis of marriage exchanges in India that prestations from the groom's side often consist of jewelry and clothes for the bride. When cash is given by the groom's family, the bride's family usually is expected to use it to purchase jewelry for the bride. While such prestations may be reported or interpreted in the literature as brideprice, they appear to be more akin to our concept of "diverted bridewealth."

Many anthropologists would agree with Karve's observation that "...all over India there is the custom of giving brideprice among the poorer castes and of receiving dowry among the higher castes" (1965:132). Indeed, Miller (1978:218-224) reports that, while brideprice is relatively widespread among unpropertied groups throughout India, dowry is prevalent in north India, especially among upper class groups. However, Miller also found that reciprocity (relatively balanced prestations in both directions) characterizes marriages among many propertied groups in central and south India and that there are exceptions to all of these reported patterns. My interpretation of Miller's examples is that many of the "reciprocity" and "brideprice" exceptions among the higher castes may be understood as "diverted bridewealth", since most of the groom's prestations end up as gifts to the bride. Nonetheless, there are examples of brideprice (as defined here) among higher castes (e.g., Madan 1965:114-118; Sanwal 1966; Sax 1990: 104-115) and landowning peasant castes (e,g., Burkhart 1969;220), as well as dowry among lower castes. The latter is becoming increasingly widespread as many low caste *jatis* have been giving up their distinctively inferior caste customs for the more prestigious ways of higher castes (e.g., Cohn 1955:75).

Some authors have emphasized the view that brideprice and dowry

[3] See Miller for a compilation of several dozen examples of this pattern (1978:227-244, 1981).

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are conceptually opposite and that they function differently in different social systems. Nur Yalman illustrates this point of view as it relates to marriage and kin in Ceylon and south India: "...dowry stands in radical contrast to bridewealth... the differences between the kinship systems that utilize one or the other type of payment are fundamental...' (1967:303). However, as we have seen, throughout India, there are communities which practice both brideprice (or diverted bridewealth) and dowry, or *jatis*, which are changing from brideprice to dowry. This seems to indicate that the distinctions between the two do not reflect radical differences in the marriage systems associated with them. Perhaps it would be more helpful to view brideprice and dowry as variant emphases on a pattern of marriage exchanges and to ask what variables may be associated with one emphasis or the other. I will now address this question for the region of Kumaon.

Marriage Prestations in Kumaon

In the Kumaon Himalayas, the highest ranking Thul-jat Brahman and Rajput castes always have practiced orthodox dowry marriages, while the majority of the Rajputs traditionally practiced marriage by brideprice. However, in the last fifty to seventy-five years, there has been a gradual shift among the Rajputs towards the orthodox dowry marriages. In the most acculturated areas, especially in villages where large numbers of Rajput males work in service, the dowry has become more of a cultural expectation than an exception. Nevertheless, brideprice still may be required secretly in these dowry marriages and then used as a diverted bridewealth. Conversely, in the early twentieth century when brideprice marriages were still supreme, token dowries also were given (Joshi 1929: Chapter 3). Clearly, we are not dealing with two polar types of marriage systems, for within the same *jati*-cluster, both dowry and brideprice have been operating together for at least seventy-five years. What I will be presenting, then, is not a movement from one polarity to another, but rather I will focus on the shift in emphasis from brideprice to emphasis on dowry.

It is clear from a broad range of historical materials (discussed below) that prior to the twentieth century, the marriage customs of the Thul-jat Rajputs and Brahmans on the one hand, and of the Rajputs on the other, were quite different. The Thul-jats, even after settling in the hills, continued to maintain standards of orthodoxy practiced earlier while living in the plains. Thus, they placed great emphasis on marriages

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involving the Sanskritic ritual of *kanyadan* (i.e., gift of virgin daughter) and dowry. Such marriages always were performed by Brahman priests according to the rules of Hindu orthodoxy. Presumably, all marriages involving Thul-jat females conformed to these standards; any exceptions resulted in nothing less than expulsion from caste. The Thuljats did not allow any remarriage of widows or divorced women. Thul-jat Rajput males, however, could take Rajput women as concubines or secondary wives. Presumably, these "marriages" were done according to Rajput customs. I might point out here that what was marriage for the Rajput may have been merely the acquisition of a concubine for the Thul-jat.

Rajput marriage, on the other hand, required no standardized ceremonial performance to render a union legitimate. Ceremonies, often, (but not always) were performed in the first marriage of a woman, and might be conducted by a Brahman priest. The latter ceremonies usually were an abbreviated portion of one of the sections of the orthodox pattern, but never the section involving *kanya-dan*. The ceremonies mentioned most frequent by older informants were the *amcal, saptapadi* and Ganes *puja*, all of which are sections of the orthodox marriage. Some informants said all they did was hold a *jagar* (spirit possession séance) so that the household deity could bless the bride. All of these ceremonies could be performed (and often were done) after the bride entered the groom's village. These ceremonies did not, in themselves, contribute to the jural completion of the marriage, nor to the legitimization of the offspring. Indeed, I would agree with Sanwal that the "...primary purpose of these religious ceremonies ... is to reaffirm their claim to be 'good Rajputs'" (1966:50).

Traditionally, there were two necessary conditions for the completion of a legitimate Rajput marriage. The guardians of the bride must be paid a brideprice (*dam*) and the bride must be taken to the residence of the groom. Feasting and ceremony probably were common (although not required) in the first marriage of the bride, but not in case of her remarriage.

The payment of the brideprice seemed to take on the nature of a commercial transaction. Sanwal reports that traditional Rajput marriage

> is that union (it need not be marked by any religious ceremonial) between a man and a woman of the recognized socio-ritual categories, which has been created by a formal transfer of power over the woman from her legal guardian to another man in consider-

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> ation of a "price" paid on behalf of the latter by his guardian ... to the woman's guardian (1966:50).

In 1929 Joshi, a keen observer of Kumaoni social organization, remarked that among the Khasa (i.e., Rajputs), "A woman is a chattel, who is purchased for one of the sons by the father of the family. The nature of the transaction is more the acquisition of a valuable article for the family than a contractual relationship between a man and a woman" (1929: 108). Prior to British rule (from 1815), a husband acquired almost complete control over his wife and her offspring. Indeed, a husband or his heirs had the right to sell her and her children into slavery. During the period of Gurkha rule over Kumaon (1790-1815), a tax was levied on the sale of wives and widows, and a duty was placed on their export (Joshi 1929:110; Walton 1911:132-133). This right to sell a wife, a widow, or her children eventually ceased under the British, but the custom was not completely eliminated. Berremen has reported this kind of "traffic in women" in the nearby district of Garhwal, among the culturally similar Garhwali Rajputs (1963:74-75), and in the 1960s I found this practice still occurring in a village near Pakhura.[4]

The nature of marriage negotiations involving a brideprice or a dowry with a diverted bridewealth has all the signs of a commercial exchange. The price is not fixed and depends on whatever the traffic will bear. Considerable haggling is expected, especially if questions of gifts and food exchanges are involved. There usually are three negotiators from each side, and local tradition holds that, when five of six negotiators agree on a point, a decision is made. This enables the leader of each delegation to compromise on an issue without actually giving in himself.

Perhaps most important in our judgment of brideprice as a commercial affair is the fact that the Rajputs themselves see brideprice marriages in terms of a sale. To illustrate this perspective. I give the following paraphrase of a quotation from a fairly well off middle-aged Rajput. I regard these comments as generally typical.

> Of my three wives (not simultaneously) all were *purchased*; but, in the marriages of my six children, there was only *kanya-dan*, *charity* of daughter. If I took money, it would mean I was selling

[4] See also Hasan (1971:Chapters 10, 11).

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my daughter. We do not do this anymore.

While the veracity of this statement is unsubstantiated, the important point is that the speaker regards the paying of brideprice as amounting to a sale and he regards such sales as immoral, although he implies that his wives were acquired precisely this way.

Another important dimension of traditional Rajput marriage by brideprice is that the transaction was not irrevocable. A woman could return to her home or marry another man. The original husband might protest, but he had no recourse provided his brideprice was returned. If a woman ran off with another man, the union was not legitimate until the first husband had been reimbursed for the brideprice.

In cases where the husband died, the usual expectation was that a young widow would marry her husband's younger brother. Informants acknowledged that the primary purpose of this was to save the cost of another brideprice. Both the widow and the younger brother had the right to reject the union. However, if she returned to her natal home or married someone outside her husband's lineage, her husband's heirs had the right to demand the return of the brideprice.

Since the beginning of the twentieth century, there has been a significant trend toward the adoption of orthodox Hindu marriages based upon the ceremony of *kanya-dan* and the giving of a dowry. The decision to have this kind of marriage usually also means the sponsoring of a rather expensive orthodox ceremony and the providing of a feast for the groom's marriage party (*barat*) and village kin. According to orthodox ideology, when one does *kanya-dan* must not accept any money;[5] however, in the past, this rule frequently was broken surreptitiously. In the traditional non-Sanskritic marriage, a feast was not expected, although sometimes the marriage party brought its own food or, perhaps, paid an extra portion for its share of a feast. But, with dowry marriages, a feast is considered obligatory, and the cost is supposed to be borne entirely by the bride's family. However, money or grain may be given to provide the cost of the marriage party's portion of the feast. Informants who admit to this practice insist that such a payment is not a brideprice, as they do not keep any of the money for themselves. However, others insisted that it was

[5] According to the classical *Code of Manu*: "No father who knows (the law) must take even the smallest gratuity for his daughter; for a man who, through avarice, takes a gratuity is a seller of his offspring" (as quoted in Tambiah 1973:68).

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wrong to take anything and that to do so was to destroy the purity of the *kanyan-dan*. In 1967, some informants said that "a few unscrupulous people" still took a large brideprice and performed *kanya-dan* anyway. However, by 1987, such diverted bridewealth-*kanya-dan* marriages were becoming increasingly rare, particularly in the first marriage of a daughter. Only poor Rajput families would accept grain or cash payments in their daughter's dowry marriage, and such unions are not easy for the researcher to find. If a poor Rajput could not afford a dowry marriage for his daughter, he would now look toward his *biradri* (patrilineage) for assistance.

All of the discussion so far has been in regard to the first marriage of Rajput females. Rajputs know very well that divorce, levirate, and widow remarriage are frowned upon by orthodox Hinduism, yet they recognize the legitimacy of all these practices. A widow is greatly praised if she stays in her husband's village without remarrying, but she is not expected to do so. While *kanya-dan* marriages probably are more stable than marriages based on brideprice,[6] the former occasionally do break up, and women, who once were given in marriage, may then remarry. The second marriage of a woman, whether widowed or divorced does not matter, is never performed with a dowry or Brahmanical ceremony, and a brideprice usually is paid either to the former husband, his heirs, or to the woman's father.[7] Although such marriages suffer some stigma, the women so married (called *nolis* or *dhantis*) bear some ritual and commensual restrictions, there is no question that these are valid, legitimate unions.

How, then, do we explain this shift in emphasis from brideprice to dowry marriages? My first reaction was to view the data in terms of

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[6] Sanwal found that "...it is generally agreed that three decades or so back, the number of marriages which ended in divorce amongst the rural Khasi (Khas-Rajput) had increased alarmingly and that "...at the present time divorces are... becoming less common" (1966:56). It is my interpretation that when marriage is conducted by *kanya-dan*, participants are making a public commitment to the "great tradition" values of a permanent marriage. A woman who is given in *kanya-dan* be returned to her natal home without embarrassing her family. However, there is no such embarrassment associated with brideprice marriages as the family is not making any pretentions. Admittedly, in such cases, the woman's parents or a future husband is expected to return the brideprice.

[7] By 1982, some informants said this might be waived because a father is embarrassed to take money for a daughter whom he already has given in *kanya-dan*. Also, a husband or his heirs may not claim compensation for a woman who was given to them rather than purchased.

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Srinivas's caste mobility model of Sanskritization.[8] The village of study is only six trail miles from Almora, the district capital and is situated in an area of relatively high concentration of immigrant Rajput and Brahman *jatis*. Local Rajputs have been long exposed to models of Sanskritic Hinduism, and they are well aware of the gaps existing between their behavior and what is expected of Thul-jat Rajputs. This seemed to be an ideal environment for Sanskritization. Furthermore, over the past few decades large number of Rajput villagers either have joined the military service or have gone to the plains or other hill towns in search of employment. Inevitably, these external contacts have sensitized further the Rajput population to the marginal nature of their form of Hinduism, while increasing their feelings of inferiority versus the orthodox standards practiced in the plains. Although aspirations to identify with plains Rajput standards are certainly a factor, Sanskritization is an insufficient explanation for the trend towards dowry marriages. First of all, the Khasa long ago had achieved Rajput status.[9] This is clear from the fact that they are generally acknowledged to be Rajputs rather than Khasa or Sudra. Thus, the local Rajputs are not attempting to claim a position or title to which they are not freely acknowledged to be entitled. Secondly, the trend, toward Sanskritic Hinduism is not occurring on a *jati*, or even on a village-wide base, rather it appears to be an individual choice. There is no corporate *jati* action involved here. Third, those who take to Sanskritic marriage rituals do not necessarily follow Sanskritic values in other religious contexts. For example, two weeks after a *kanya-dan* dowry marriage, a Rajput family held an unorthodox spirit possession séance (*jagar*) to bless the new bride (see Fanger 1990). In another case, a man, who married his daughter with a substantial dowry, bought a second wife for his son when the latter had no children from his first wife.

Thus, while the Rajput's increasing exposure and sensitivity to orthodox values is a likely factor in the observed trend, by itself, it is an

[8] "Sanskritization is the process by which a 'low' Hindu caste... changes its customs, ritual, ideology, and way of life in the direction of a high... caste. Generally such changes are followed by a claim to a higher position in the caste hierarchy than that traditionally conceded to the claimant caste by the local community" (Srinivas 1966:6).

[9] Sanwal (1976:43-44) reports that the Khasa were elevated from Sudra to Rajput status during the reign of the Chand *rajas* (which ended in 1790). Pauw (1896:12) and Berreman (1963:130) indicate that the Rajputs of Garhwal were without the sacred thread (a traditional high caste ritual marker) until the twentieth century.

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insufficient cause of change and only can provide a partial explanation. I would suggest that a significant additional factor is to be found in the economic forces that surround the widespread employment migration outside the village that I mentioned in the introduction, This seems to be a likely path to pursue when we take into account the enormous economic implications in the shift from a brideprice to a dowry marriage. Whereas the typical brideprice may cost the groom's family over one thousand rupees, a dowry marriage often will cost the bride's family several a thousand rupees.

The population of the village has expanded rapidly in the past few decades[10] so that the size of most land holdings is barely sufficient to meet the peasant's normal consumption needs. Largely due to this economic pressure, village men have taken to the military and other forms of service in large numbers. In 1967, some sixty-one percent of the Rajput village households studied had a total of seventy men involved in fulltime outside employment. By 1982, employment migration had expanded to the point where eighty-five of the ninety-three Rajput households surveyed (ninety-one percent) had at least one man employed in the external cash economy. A total of 105 men were employed outside the village as opposed to forty-one who worked in the village as farmers. The few families that had no men in service were headed mostly by widows with no adult sons, or elderly men who had retired from service. Moreover, of the forty-one village farmers in 1982, many received cash income locally on a seasonal or daily wage basis. While comparable statistical data on these points were not collected in 1986-87, it was very clear that this pattern of employment migration and increased participation in the cash economy had continued unabated. Thus, although village land holdings are insufficient to meet the subsistence needs of most peasant households, villagers have been very successful in gaining supplementary income through employment migration.[11]

There are two direct consequences relevant to this study from these economic developments. First, the simultaneous reduction in land holdings per family and increase in population have minimized considerably the heavy burdens of women and, at the same time, reduced their

[10] Whereas the official 1961 Almora district census reported 491 people in PakhuRa, my village census recorded 617 people in 1967 and 839 people in 1987.

[11] This employment migration has taken them throughout the plains of norther India, mostly to the large urban centers or into the Indian military and police services.

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importance in the village economy. Kumaoni women have been long famous in Uttar Pradesh for the incredible amount of work that they perform in the Himalayan domestic economy. They do almost all of the agricultural work except the plowing, and gather huge loads of pine needles, oak leaves, grass and green branches for the cattle's shed and fodder. In addition, they do the usual household chores of cleaning, tending the cattle, cooking and so forth. Their importance and high value clearly were reflected in the brideprice form of marriage. Today, they continue to perform all of these tasks; however, the amount of work done per female has been reduced considerably due to the decrease in the size of the average land holding. There are more women to work less land and, thus, their economic value has been reduced proportionately. This observation is consistent with the findings of Boserup who noted that, when the major part of agricultural work is done by women, there often is a higher incidence of brideprice; but, where women do less agricultural work than men, dowry is more prevalent (1970:50).

The second point is that, although the agricultural economic base has been reduced in its relative importance to each household's production, it also has been more than offset by the wages earned by men in service. Indeed, many families appear to be financially better off today than they were just a generation ago. During my stay in 1986-87, I was struck by a considerable improvement in village prosperity. Many new houses had been erected and older houses had been expanded and improved, new *pakka* (cement) irrigation canals had been constructed and a large irrigation scheme recently had been completed. A new village temple and a new water source had been constructed and people had many more household and personal possessions. The number of students in school was greatly increased, and students were achieving much higher grade levels of education. Whereas in 1967, only four students had reached the ninth grade, in 1987, this achievement was commonplace, and one student had just completed his M.A. All of these changes inevitably have effected marriage and marriage prestations. While in the past a man hardly could afford not to "sell" his daughter in marriage, today he is ashamed to do so. Indeed, with his new-found financial security, he is motivated to express his wealth in an idiom that not only manifests his material success, but also increases his prestige and asserts his identity as a good Rajput. Dowry feasts are an ideal form of conspicuous consumption. In one stroke, today, the Rajput who performs *kanya-dan* marriage establishes his reputation as a good, religious man, and a wealthy generous person.

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Summary

Up to the nineteenth century traditional Rajput marriages in Kumaon were largely brideprice arrangements with little attention paid to Brahmanical rituals. Sometime around the beginning of the twentieth century, Rajputs began to adopt dowry marriages, while often continuing to accept brideprice. Gradually, the brideprice was converted to a "diverted bridewealth" for the bride's family used the brideprice to pay for the dowry and the wedding feast. Within the last generation, the brideprice has become a rarity, except among poorer Rajputs or in the remarriage of widows and divorced women. Simultaneously, dowry and *kanya-dan* have become a fairly standardized custom in the first marriage of a woman. Indeed, the practice now is normative in the village of study.

Three possible factors help explain this process of change. First, we explored whether the movement toward dowry was part of a broader Sanskritization-like social mobility movement. Although the Rajputs of today were formerly classified as Khasa and Sudra, there is little evidence of a *jati*-wide social mobility movement. In fact, they long ago successfully achieved their current Rajput status and rank. Nevertheless, opportunities to observe orthodox role models of Rajput and Hindu behavior have dramatically increased in the twentieth century and undoubtedly constitute an important consideration in the change of marriage customs.

Secondly, it was observed that the expanding population and decreasing size of per capita land holdings have conspired to reduce significantly the agricultural labor of women. Simultaneously, because male employment migration has increased, the relative importance of agricultural labor in the village economy has declined as well. Usage of the brideprice form of marriage was indicative of the enormous importance of women in the traditional economy, whereas the emergence of dowry suggests her decreased role in the expanding cash economy of employment migration.

Finally, we noted that the Rajput's increasing participation in the cash economy through employment migration brought considerable improvement in village prosperity. Although Rajputs are not trying to change their position in the caste hierarchy, they do aspire to recognition as good, proper Rajputs. With their new success and increased awareness of plains Rajput behavior, they now can better afford many of the ceremonies and customs befitting a Rajput's position in society. Accordingly, dowry and *kanya-dan* have become important means to express their new prosperity as well as their traditional Rajput identity.

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THE STUDY OF RITUAL AS AN ASPECT OF HUMAN RELIGIOSITY

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Recent centuries have seen the remarkable "secularization" of human religious expression in European and North American civilization. Eliade's description of nonhomogeneous space, time, and action as the bedrock of human religious expression still serves as a fine starting point for the investigation of such expression in human culture. Within our own cultural tradition, however, the secularization which followed from the elevation of reason and the intellect in the Enlightenment has in many respects obscured some facets of our own religious expression from our recognition of them *as* religious. We can point far more easily to examples of sacred space and sacred time than we can to sacred action; and ritual, taken as the most elaborate expression of religious action, has been for us the most difficult to discuss.[1] The essence of ritual as a fundamental human expression has not been satisfactorily described. In this essay I would like to suggest, in part, why this might be. It appears to me at once that the simplest reason for the unsatisfactory descriptions of ritual as a fundamental human expression is a pervasive feeling among investigators that we must distance ourselves from our subject; that, as students of religion, we investigate something which is a foreign object of investigation. In fact the subject of our study is not "humans and their expressions of religious experience", as though we were studying a group of extraterrestrial oxygen-breathing sophonts from 40 Eridani, in much the same way, perhaps, as missionaries studied the extra-European "natives" they encountered not so very long ago.[2] While many of the

[1]"Sacred concepts", a category which Eliade might well have included in his model, are easier still to point to. Political and social tenets with respect to "Liberty" and "Justice", for example, form a complex and pervasive mythology which has been given virtual canonical status in the constitutions of most modern nations.

[2]It seems a little stupid to have to say this in this way. Of course we are humans. But the a recognition of the commonness of our humanity is requisite for the universalities we hope to discover about the fundamental essentials of human religious experience, and as such must form a part of our methodology for religious investigation. If, for example, we wish to talk about ritual masks and

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comments to follow may pertain more generally to the study of religion, I will consider chiefly the study and description of ritual, taking as an initial focus an article which Frits Staal wrote just over a decade ago, and following with a recent work by the iconoclast Jonathan Z. Smith. The thrust of my argument will be to show that our own orientation to the world and to the material which we study—in other words, our own religiosity—has a great deal to do with the way in which we approach religious facts, especially those facts which do not allow themselves to be easily reduced to intellectual categories: the facts of ritual.

Staal's (1979) article "The meaninglessness of ritual" draws on a number of assumptions about ritual, and about its investigation and our understanding of it, which lead him to a number of disturbing and untenable conclusions. Chief among these assumptions is his concern with absolutes and his tacit distaste for the unclarities which we must come to expect when we endeavour to understand humankind's religious expressions. If such unclarities are reckoned with, the disturbing intellectual conclusion that ritual is meaningless need not be reached.

I must begin with a methodological question. Professor Staal says that he would not be able to come up with an adequate answer if someone were to ask why he writes about ritual (Staal 1979:3). I do not understand this at all. We may study religion and religious activities because we are concerned with the curious things folk do. We may study it because we find in ourselves a passion for the human condition and a sympathy for questions of Transcendence and its relation to humankind through what is sometimes called Salvation or Enlightenment. We may study it because we are interested in the growth and development of human consciousness and culture. But in any case we have got to have some idea why the study of religion and religious phenomena excites us, or we may find ourselves asking the wrong kinds of questions and getting the kinds of answers which only obfuscate matters.

When Staal suggests that "the science of religion failed to make the transition which would have turned it, like linguistics, from a respectable branch of scholarship into a contemporary scientific discipline as well" (Staal 1986:40–41), he proceeds on the assumption that subjectivity is incompatible with rigourous methodological investigation. I maintain that, *especially* when we deal with religion, the subjective may not be ignored. It is not the case that religious studies must be denied "the status of a science on the basis of the belief that religion cannot be studied objectively", nor is it the case that this "implies that it cannot be studied

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costumes, we should first remember that we too from time to time put on masks and costumes for special occasions. It *feels* a certain way for us to do that. It probably does not feel at all the same way for the Iroquois, when they don ritual costume; indeed if it did we should be surprised. But it still incites certain feelings for them and our investigations must always take that into account. The *feeling* arises as a part of the nonhomogeneity of action which is ostensibly one of the points of our investigation in the first place.

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at all" (Staal 1986:35). We must also come to understand the provenance of the subjective, both of the individual or tradition which we study, and of the cultural preconceptions which we have as investigators.[3] To the degree that we understand the matrix of our own conceptual mythology, to that degree can we free ourselves from those bounds and approach a genuine "objectivity" from which we can understand the subjectivity of another tradition in its own terms.[4] We *must* do this before we can begin to describe religious traditions with the vocabulary of our discipline and thereby come to a greater understanding of our inheritance as a religious species. Even in physics, relativity and recent work in quantum mechanics have demonstrated that the observer cannot be removed from the object of observation.[5] Religion is not the kind of subject which one can study through the dispassionate glass of feigned objectivity. True objectivism, were it possible, would lead to a highly reductionist behaviourism which could not serve to answer the real questions which we seek to answer. Sensitivity, intuition, and an ability to read between the lines enough to get inside and *feel* in some measure a given tradition, are the tools we must cultivate for our investigations. We recognize first that we too are *homines religiosi*, and we can move to understand the facts from a more objective distance as our discipline requires only after we have sacrificed a bit on the altar of our own subjectivity.

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[3]Our role *as investigators* is key here. If I want to learn Dutch, it helps if I can remember that I know English and German. On reflection, I can see that sometimes those two languages will help me in my attempts, and I can do well to use what I know to make my learning Dutch easier. But I can also see that there are points at which I will be much hindered if I cling to English or German structures: and I am better off if I endeavour to avoid relying on them. Only that way will my Dutch be Dutch. In many respects, an important theme behind this essay and for the student of religion is the axiom γνῶθι σεαυτόν.

[4]If, for example, we were to consider the Puru ṣa-sūkta to be a creation myth, we might be imposing our own biases on that document. Our tradition has accustomed us to understand the universe to have been created by a Creator: the potter and the pot of *Jeremiah* 18. But the *Puruṣa-sūkta* is no creation myth; it is a cosmogonical one. There, the Universe is not Made, It is Emanated: पुरुष एवेदं सर्वं यद्भूतं यच्च भव्यम्। . . . ततो विष्वङ् व्यक्रामत् साशनानशने अभि॥ *Púruṣa evédáṁ sárvaṁ yád bhūtáṁ yác ca bhávyam. . . . Táto víṣvaṅ vy akrāmat sāśanānaśané abhí.* 'It is the Man which is all this, that which has been and that which is to be. . . . Hence he expanded out in all directions into those which eat and those which do not eat' [that is, into animate and inanimate, or, perhaps, embodied and unembodied beings] (*Ṛgveda* 10.90.2,4).

[5]Staal maintains that the kinds of rules described from the rituals he studies are in fact features *abstracted* from events. There can only be so great a degree of abstraction. If in fact, "the laws of physics do not correspond to specific events that take place in [his] garden, but to features *abstracted* from such events" (Staal 1986:41), I for one would like to see that garden. The abstracted laws must still be applicable to the specific horticultural events, or they must be understood as incomplete.

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Staal begins with a critique of the common assumption that ritual is an activity concerned not with itself, but with its goal or end. The performers of ritual, he tells us, are totally absorbed with the correctness of their acts, recitations, or chants. "Their primary concern, if not obsession, is with rules. There are no symbolic meanings going through their minds when they are engaged in performing ritual" (Staal 1979:3). I do not see what Professor Staal is saying. *Is* ritual about the rules which govern it? Or is it more than that, perhaps a thing greater than the just the sum of the people involved, the involvement, and the rules guiding the two? We might properly consider ritual action to be action *truly* concerned with action: action done for the meaningfulness of the action itself, with consciousness centred on the action. This is not the same as being concerned with the rules. Does Professor Staal really mean to convince us that there are people who participate in ritual for the sake of the rules which govern the ritual? Who could they be? Perhaps they are members of the preliterate societies whom he says anthropologists have confined themselves to studying (Staal 1979:7). He certainly *cannot* be talking about (for example) a twentieth-century Anglican priest, who has studied in seminary some sort of history of the liturgy and the symbolism of the Mass. Yet the Mass is a ritual, and, given a certain variability of register ("High Mass", "Low Mass", "folk Mass"), the concern with proper performance of the ritual does not take the whole of the priest's attention. For the priest, it is the meaning of the ritual which is important, and which feeds both faith and intention as the bread and wine are given to the congregation. The ritual is vital, for the meaning of the sacrifice and of the Lord's Supper is here conveyed powerfully and nondiscursively. It can be conveyed in other ways, but the *feel* of it is different; that ritual aspect of the Christian religious tradition can only be properly understood *ritually*. If this seems tautological it is because it *is* tautological; but that does not alter its fittingness. Staal sees clearest when he sees this fact. He asks *why:*

> There is only one answer which the best and most reliable among the ritualists give consistently and with more than average frequency: we act according to the rules because this is our tradition . . . . The effective part of the answer seems to be: look and listen, these are our activities! To performing ritualists, rituals are to a large extent like dance, of which Isadora Duncan said: "If I could tell you what it meant there would be no point in dancing it." (Staal 1979:4)

And indeed this is true. It is true about most subjects which resist

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reductionist approaches to their essence. Ursula K. Le Guin, writing about her fiction, said much the same thing, in terms which are, as it turns out, quite relevant to the study of ritual:

> In reading a novel, any novel, we have to know perfectly well that the whole thing is nonsense, and then, while reading, believe every word of it. Finally, when we're done with it, we may find—if it's a good novel—that we're a little bit different from what we were before we read it, that we have been changed a little, as if by having met a new face, crossed a street we never crossed before. But it's very hard to *say* just what we learned, how we were changed.
>
> The artist deals with what cannot be said in words.
>
> The artist whose medium is fiction does this *in words*. The novelist says in words what cannot be said in words. . . . All fiction is metaphor. . . . A metaphor for what? If I could have said it non-metaphorically, I would not have written all these words, this novel. . . . (Le Guin 1979:x)

Ritual, like Le Guin's "good novel", is a thing which can transform. It may not do so in any way that can be treated effably. I do not mean to suggest that ritual action is nonsense, except in the most reductionist of senses, in which indeed everything is nonsense. We are all familiar with the contrast of *sacred* with *profane*, and we all know that anything, from animal dung to human sexuality, has been, can be, and will be either besmirched or ennobled by some person or people somewhere in the world. Sacred space, sacred time, and sacred action comprise some of the things we look at when we are exploring religious expression. I will take it for the time being—though this is by no means the only way the problem can be taken—that ritual action as sacred action is opposed to (or can be distinguished from) profane or ordinary action.[6] Proceeding from here, when we notice the vast multiplicity of human action that exists as potential for sacralization, we will not, as Frits Staal is, be discouraged when we find the interpretations of such action to be (logically)

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[6]In fact the dualistic polarity between *sacred* and *profane* ignores an important third category, that of *neutral* action, space, or time. Deprecation, indifference, and exaltation are three levels upon which we evaluate our world. I take it as given that the specific evaluation of whether a thing, place, or act is *sacred, neutral,* or *profane* is *subjective* with respect to the individual, the tradition, and the individual within the tradition. (On the other hand, even this distinction is not wholly satisfactory: indifference and neutrality are illusory. Since it is probably still best to distrust dualism in this matter, I suggest that the best terms for the *continuum* along which we humans organize things might be *sacred/mundane/profane.)*

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inconsistent within a tradition (Staal 1979:4). For any tradition, the origins of some ritual may have become lost in antiquity, and every tradition will have some sort of "rationalization" which recounts and perhaps "accounts for" the difficulties encountered by the changes which have occurred in the natural dynamics of the growth of the tradition. Such an account may be considered by the tradition to be completely True.[7]

Professor Staal has found that the Hindu tradition offers no "single consistent theory of ritual", but rather a number of "intolerable" contradictions (Staal 1979:7). I am not convinced that this intolerability is in all cases warranted by the facts, or in any case that native dichotomies in descriptions of ritual should lead to our definition of ritual as meaningless. Staal begins by stating that the Vedic *śrauta sūtras* characterize ritual as consisting of substance (*dravya*), deity (*devatā*), and renunciation (*tyāga*). "The *tyāgā* [sic] is a formula pronounced by the Patron at the culmination of each act of oblation" (Staal 1979:6). The formula goes *"agnaye idaṁ na mama"*, which Staal translates as 'This is for Agni, not for me'. But *agnaye* is the dative of *agniḥ*, and *mama* a genitive, so we might take this to read: 'This is for Agni; it is not mine'. The effect of this renunciation of the fruit of the ritual need not be understood as a rejection of it. Where Staal cites the *Bhagavadgītā* I think he has misunderstood Kṛsna's intent:

> The notion of *tyāga*, "renunciation," has attained an important position in Hinduism through the teachings of the Bhagavad Gītā. Here Śrī Kṛṣna advocates as the highest goal of life a mode of activity, in which acts are performed as usual, but the fruit (*phala*) of action (*karman*) is always renounced (*karma-phala-tyāga*). (Staal 1979:7)

A look at the Sanskrit suggests that the renunciation is not so drastic as Staal suggests:

> अथैतदप्यशक्तोऽसि
> कर्तुं मद्योगमाश्रितः
> सर्वकर्मफलत्यागं
> ततः कुरु यतात्मवान्
> athaitad apy aśakto 'si
> kartuṁ madyogam āśritaḥ
> sarvakarmaphalatyāgaṁ
> tataḥ kuru yatātmavān (*Bhagavadgītā* 12.11)
>
> Now if you are unable to do even that,

[7]Lori Kenschaft has suggested to me that such accounts might, as well, "be accepted as not true, but meaningful anyway".

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take refuge in my discipline,
in renunciation of the fruits of all action,
in control of the self.

कार्यमित्येव यत्कर्म
नियतं क्रियतेर्जुन
सङ्गं त्यक्त्वा फलं चैव
स त्यागः सात्त्विको मतः
kāryam ity eva yat karma
niyatam kriyate 'rjuna
saṅgam tyaktvā phalam caiva
sa tyāgaḥ sāttviko mataḥ (*Bhagavadgītā* 18.9)

When prescribed ritual is done
simply because it 'is to be done', o Arjuna,
abandoning attachment and fruits,
the renunciation is considered true.

न हि देहभृता शक्यं
त्यक्तुं कर्माण्यशेषतः
यस्तु कर्मफलत्यागी
स त्यागीत्यभिधीयते
na hi dehabhṛtā śakyam
tyaktuṁ karmāṇy aśeṣataḥ
yas tu karmaphalatyāgī
sa tyāgīty abhidhīyate (*Bhagavadgītā* 18.11)

The embodied person is never able
to abandon action entirely,
but the one who has renounced the fruit of actions,
is considered a true renouncer.

What I understand from this (and from other passages in the *Bhagavadgītā)* is not that the rites are considered inefficacious, but rather that their efficaciousness or inefficaciousness is not at question. It is a question of whether the aspirant is performing the ritual *in order that* he may attain the results which the ritual is purported to cause, or whether he is performing it for the deity to whom the sacrifice is dedicated *regardless* of subsequent results. If he sacrifices *agnaye,* for Agni, he may still reap the benefits of that sacrifice, that is, gain entrance into heaven or the like. I do not agree with Professor Staal that the Mīmāṁsā formula *"agniṣtomena svargakāmo yajeta"* 'he who desires heaven shall sacrifice with the Agniṣtoma ritual' and the *tyāga*-formulæ are mutually exclusive. It is illogical to think that, if the complexities of the Agniṣtoma ritual will get you into heaven, that just *"agnaye idaṁ na mama"* will keep you out; it seems to me, then, that the intent of all of this is to remind the

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sacrificer of the importance of the *devatā*, so that he does not get sidetracked into the magical effects which are said to proceed afterward.[8]

It is important that our understanding of what the fruit of ritual action is remains grounded within the framework of the tradition itself. Let us consider again the notion that *"svargakāmo yajeta"* 'one desiring heaven will sacrifice'. One of the things which the Mīmāṁsā tradition does *not* do, is to ask the question "What is heaven?". It is taken for granted that heaven is the goal of sacrifice. Pandit Mohan Lal Sandal has taken up the question of sacrifice and its object:

> According to the Mîmâṁsâ school of philosophy, no act is possible without a motive. . . . An act performed without a motive is an act of a lunatic. The motive or object in view may be either visible or invisible.
>
> What is the object of a sacrifice? It is to secure heaven; it is said 'स्वर्ग कामोयजेत' [*svarga kāmoyajeta*, sic] 'let one desirous of heaven perform a sacrifice.' Here an agent is the performer; the heaven is the object and the sacrifice is a means to obtain it. We have therefore three factors; the actor, the object, and the act.
>
> Any person who is possessed of the desire to secure heaven is entitled to perform a sacrifice. No person can be said to be without such desire. Every human being possessing capacity, has a desire to secure heaven. The animals or birds cannot have such desire or capacity. (Sandal 1974:cv)

Sandal offers no discussion of what heaven is, only affirming that it is *ipso facto* a fundamental exigency, a fact of human existence which is neither questioned nor questionable. Western popular tradition inherits the view that heaven is a kind of reward for good behaviour and obedience to God and his commandments while here on earth. Is this the sort of thing we can understand *svarga* to mean? Perhaps indeed it is not. It is possible that Jaiminī's 3rd century B.C. *svargam* can be properly glossed 'to

[8]Cross-cultural study may show that the "magical" efficacity of ritual is not of necessity a ubiquitous notion. "Magic" may be considered the "supernatural" result of a sacred action, immediately visible in some fashion or other. Vedic ritual leading to heaven would not be considered magical, but rather an "essential" or "spiritual" action. The Transubstantiation in Christian tradition is more difficult; various factions have preferred either to name it "mystery" or to call it simply "symbolic". In the former sense it is both magical and occult, since no transformation is directly perceptible by the participants in the ritual. It is not my intention to offer a coherent terminology for such things here, merely to point out that as sacred action there is a difference among them with respect to their intention and to the obviousness of their reputed results.

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Transcendency', and equated in part with the terms *mokṣa* and *nirvāṇa*.[9] Sandal's "object" is by nature sacred; by performing the sacred act, the actor too is able to experience the Transcendent.

Jaiminī's *Mīmāṁsā Sūtras* refer explicitly to the primacy of this desire for heaven in Vedic ritual. Whenever the goal of a specific ritual act is not given in a text, the "default" goal is *svarga:*

> तत्सर्वार्थमनादेशात् ॥
> एकं वा चोदनैकत्वात् ॥
> स स्वर्गः स्यात्सर्वान्प्रत्यविशिष्टत्वात् ॥
> प्रत्ययाच्च ॥
> tat sarvārtham anādeśāt.
> ekaṁ vā codanaikatvāt.
> sa svargaḥ syāt sarvān praty aviśiṣṭatvāt.
> pratyayāc ca. (Jaiminī 1974:231, sūtras 4.3.13–16)
>
> That [ritual produces] the goal of all, because it is unspecified,
> and one [fruit], because of the rule of singularity.[10]
> This [goal] is heaven, because it is [a desire] common to all,
> and because of [our] experience.

For each ritual, then, the goal is either specified or it is *svarga*, and the fruit results from the proper performance of the ritual because that is the nature of ritual itself. *Tyāga* can apply therefore to any type of ritual: though the fruits are renounced, they still accrue from the activity of the ritual, *phalārthatvāt karmaṇaḥ* 'because the goal is the fruit of an action' (Jaiminī 1974:299, sūtra 6.1.4). It would be a mistake to consider this merely a reward for properly carrying out the sacrifice. In this respect one may suggest that *svarga* had a broader range of meaning than the narrow sense of "otherworld" which we might see at first; it may have had a spaciousness to contain less literal, that is to say more mystical, meaning than is typically attributed to it,[11] and be analogous, in some contexts, to

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[9]I am aware that many Buddhists would balk at a glossing *nirv āṇa* as 'the Transcendent', and I use the term here only to refer to *nirvāṇa* as "the highest and ultimate goal of all Buddhist aspirations" (Nyanatiloka 1980:128). To the historian of religions, the term "the Transcendent" suffices as well as or better than any other, as a general term appropriate to this, the remarkable feature of human aspiration which is the matter of our subject.

[10]When none is specified, the assumption is that only one fruit accrues, and that it is the highest (*svarga*). *Cf.* S ūtra 4.3.10 in Jaiminī 1974:229, and Sandal 1974:lxxix. The translation used here is my own.

[11]In much the same light as many Christian mystics have taken Jesus' 'Kingdom of Heaven'. *Cf.* Logion 3 from the Coptic *Gospel of Thomas:* ⲧⲙ̄ⲡⲧⲉⲣⲟ

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mokṣa and *nirvāṇa* as suggested above.

We have seen that it is important to take a given tradition in its own terms before we can endeavour to explore it with our own categories, with the language of religious studies or the history of religions.[12] We must remember that we are always translating one set of terms not into equivalents, but into correlates, and we can hope *at best* that our transmythologizing is innocuous and careful, faithful to our documents: but transmythology it remains. Of paramount importance in this respect is the fact that religio-historical discussion traditionally makes no claim to Truth, in order to remain sober and steer clear of any "nonscientific" subjectivism.[13] But the mythological and ritual events we investigate have no such inhibitions; indeed, they regularly make claims to Truth, which our jargon and categories have not helped us to understand, much. Even where we have the useful category "the Transcendent", how much work has been done which proceeds as though we didn't? Our sources are interested in the Transcendent, not in "religion": recall first that most traditions don't even have a word for what we call "religion"; and second, that to them, our categories could well appear as mythological as theirs appear to be to us.

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Recently, Jonathan Z. Smith endeavoured to show that ritual was a

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ⲥⲙ̄ⲡⲉⲧⲛ̄ⲣⲟⲩⲛ̀ ⲁⲩⲱ ⲥⲙ̄ⲡⲉⲧⲛ̄ⲃⲁⲗ̀. ⲣⲟⲧⲁⲛ ⲉⲧⲉⲧⲛ̄ⲯⲁⲛⲥⲟⲩⲱⲛ ⲧⲏⲩⲧⲛ̄, ⲧⲟⲧⲉ ⲥⲉⲛⲁⲥⲟⲩⲱ̄ ⲧⲏⲛⲉ ⲁⲩⲱ ⲧⲉⲧⲛⲁⲉⲓⲙⲉ ⲁⲉ ⲛ̄ⲧⲱⲧⲛ̄ ⲡⲉ ⲛ̄ⲯⲏⲣⲉ ⲙ̄ⲡⲉⲓⲱⲧ̀ ⲉⲧⲟⲛⲉ. *tM ñtero sm̃petn̄houn auô sm̃petn̄bal. Hotan etetn̄šansouōn tēutn̄, tote senasouô tēne auô tetnaeime je ñtōtn̄ pe ñšēre m̃pEiōt etonh.*
'The Kingdom is within you and around you. When you know yourselves, then you will be known and you will realize that it is you who are the sons of the living Father.'

[12]A distinction which need not be addressed here. Much could be made of it, but getting involved in the hairsplitting of methodological categories is not my intention; I hope only to propose a more sensible and honest way of getting at things than is commonly met with. Perhaps one day we will have a methodology in which the barrier of "I" and "other" will be unimportant except insofar as it is celebrated; in which case we will have become less afraid of "Religion" and more aware of "Ways".

[13]Roger J. Corless has noted that, in the history of the study of religion, it became "more and more regarded as a 'subjective experience' (so that it is, perplexingly, implied that there can be something objective which is not experienced), and subjective experience itself became more and more discounted, whilst it was in something that began to be called 'science' that practice and theory remained united" (Personal communication, 5.v.88). This dread of the "subjective" is a significant philosophical and conceptual roadblock which we would do well to bulldoze away. Indeed, if religion is not rooted in experience it is less than nothing. To continue to study religion in this fashion is folly. *Sic transit gloria positivistarum.*

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complicated but arbitrary system for "the elaboration of relative difference", which difference has to do with what Émile Durkheim called "two heterogeneous and incompatible worlds", or what we might call the sacred and the mundane (Smith 1987:112, 39). This thesis is not satisfactory. Ritual, according to Smith, exists in order to classify the world: it "is systemic hierarchy par excellence" (Smith 1987:110). Louis Dumont's ideas of hierarchy form the foundation for much of this argument.

> Dumont insists on a sharp distinction between systems of status and systems of power. Status is founded on the absolute dichotomy of the pure and the impure, and is expressed as a relative hierarchy of degrees of purity and impurity, with the priest at its summit. It is, essentially, a sacerdotal system. Power is dominance—a hierarchy of degrees of legitimate force, with the king at its summit. It is, essentially, a juridical system. (Smith 1987:54–55)

Dumont's duality should not have been taken uncritically. In point of fact, systems of status can be built upon the respect one has for the wisdom of one's elders (as in many traditional societies, and in Confucian China), and power can be a thing not of control, but of empowerment (again, as in many traditional societies, and as it appears to have been in neolithic Europe).[14] The kinds of maps of sacred space which Smith draws for us are utterly intellectual.

We have no choice but to recognize the chasm of difference and similarity between the ways in which we approach things and the ways in which an ancient or traditional culture would do so. As students of religion in the Western academic tradition, both Smith and Staal set out to try to make ritual make sense: *intellectual sense*. For either of them, sacred word, sacred space, and sacred action all must mean something, and, for them, "mean" means 'signify to the intellect'. Smith seems unwilling to discuss the Transcendent at all; when Durkheim asks what it is that "[leads] men to see in the world two heterogeneous and incompatible worlds, though *nothing in sensible experience* seems able to suggest the idea of so radical a duality to them", the italics are Smith's (1987:39). He continues with Durkheim's answer:

> It is, Durkheim argues, the alternation between the repetitiveness of ordinary life and the "effervescence" of

[14]On this last point, Riane Eisler has used Jean Baker Miller's dichotomy of power *for* oneself and power *over* others in her recent work. She suggests that a symbolic system in which the power to inspire others to do is central is a symbolic system both more powerful and more sane than systems based on the dominator-model (Eisler 1987:193, 238 n.46).

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celebratory ritual that gives rise to the duality.

> How could such experiences as these fail to leave in him [the aborigine] the conviction that there really exist two heterogeneous and mutually incomparable worlds? One is that where his daily life drags wearily along; but he cannot penetrate into the other [ritual life] without at once entering into relations . . . that excite him to the point of frenzy. The first is the profane world, the second, that of sacred things.
>
> In other words, it is a distinction in the social experience of the quality of time that stands at the origin of the absolute spatial dichotomy of sacred and profane, which, in turn, generates the other cognitive dualities on which intellection rests. (Smith 1987:39–40)

There are a number of difficulties here, not the least of which is the immediate question: Is intellection predicated by cognitive duality?[15] It is the ellipsis in Smith's citation of Durkheim which betrays his discomfort with the notion of the Transcendent: the sentence reads in full: "but he cannot penetrate into the other without at once entering into relations *with extraordinary powers* that excite him to the point of frenzy."[16] Why censor out the Transcendent? The difficulty may stem from Smith's apparent equation of the substantive "Sacred" with "Transcendent". Ritual, he says, "is not a response to 'the Sacred'; rather, something or someone is made sacred by ritual (the primary sense of *sacrificium)*" (Smith 1987:105). Here, ritual is a purely systemic abstraction, a kind of apology for paradox. Since, according to Smith, dualism is ostensibly inherent in human conceptualization, ritual must be repeated, either to underscore or abolish temporarily that tension between sacred and profane. In his chapter on the temple in *Ezekiel* 40–48, he sums up his findings:

> Ezekiel, by employing complex and rigourous systems of power and status with their attendant idioms of sacred/profane and pure/impure, established structures of relationships that were capable of being both replicated and rectified within the temple complex. Being systemic, they could also be replicated without. (Smith 1987:73)

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[15]"Either/or" is a very Western way of looking at things, and has something to do with the win/lose dominator-model of power mentioned above. "Both/and", a win/win model of power, and a whole-is-greater-than-the-sum-of-its-parts way of looking at things are perfectly good examples of *other* human orientations which predicate intellection.

[16]My italics here.

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The maps of sacred space in *Ezekiel*, he maintains, are "primarily conceptual" (Smith 1987:49). Now I am not a Biblical scholar, and do not pretend that I have a better answer to what is going on in the labyrinthine workings of Ezekiel's text. But I am sure that what is *not* going on is an ancient Israelite concern for "establishing structures of relationships" for endless replication, or for maintaining a status quo authority, political or otherwise. I am not sure that the maps are primarily conceptual, even if they are *not* meant as architectural blueprints. I *am* sure that they are *symbolic*, and I think we will get further along in understanding the symbolism of this text by looking at traditional commentary on it. I should be surprised to discover that Hebrew tradition finds the text to be about status or power or structural hierarchies. The text does differentiate, as Smith points out, between the role of the Zadokite priests and the Levite priests, and offers a kind of hierarchy for other persons and their dealings with the temple (Smith 1987:57–65 *passim*). But the important thing is not who gets to do what in the temple; it is that YHWH wants it that way.

The thrust of Smith's argument is ostensibly to treat "the issue of ritual and its relation to place" (Smith 1987:xii). He is interested in a broad, "generic" investigation which may shed light on the problem of ritual as a religious fact. Smith's discussion of place *qua* place has many merits: his critique of Eliade's lococentric model of sacred space (the *axis mundi* in Tjilpa cosmogony) is most trenchant (Smith 1987:1–17); and his citations of the work of geographers Edward Gibson, Alan Gussow, and especially Yi-Fu Tuan suggest valuable new insights into the meaning of sacred space. But, unfortunately, Smith lets his analysis take him much too far.

The crux of the problem is that Smith exalts *place* rather too much. "Ritual is, first and foremost, a mode of paying attention", he says, and "place directs attention" (Smith 1987:103). But he has neglected any reference to whatever else in life and ritual also directs attention. Is *place* what makes a thing sacred? Professor Smith cites Rabbi Akiva's passionate exhortation that the *Song of Songs* not be profaned by making it into a dirty drinking song in order to support his claim that the issue is not the content of religious forms, but the location in which those forms are found (Smith 1987:104). While Smith calls the *Song of Songs* an "erotic ditty", the attentive reader can easily guess that Akiva considers it to be sacred. Smith, it seems, will allow the songs their sacredness "sheerly by virtue of their location" (Smith 1987:104). Who is right? My money is on Akiva. What Smith is trying to do is emphasize the fact that sacredness and profanity are not inherent in objects, but attributed to them. This has been observed above as well. But where we cannot agree with him is in his supposition that "[t]he *sacra* are sacred solely because they are used in a sacred place". This simply does not follow. To be sure, place has much to do with sacrality and consecration; but it is not the *source* of the sacred as Professor Smith would have it. Rather, it is the

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Transcendent toward which place and implement, actions and intention reach which is the source of holiness.

It does not seem that one can rank place over movement, for example. *Intention*, however, the yearning for the Infinite, is something to which we can attribute priority. It may be seen that the category of *intention* rescues the researcher from the obligation of relentlessly seeking diachrony in the genesis and development of ritual forms. We may wish to discover such things, but we may be content as well with the valuable task of determining *how* such forms work with respect to the Transcendent. The analogy between ritual dichotomies and Roman Jakobson's overstrong notions of phoneme theory, of which Smith makes much, simply doesn't help us get very far in understanding ritual (Smith 1987:110).[17] Oddly enough, however, it is a point on which Staal and Smith agree: it leads to the conclusion that ritual is without sense in itself. For Smith, the meaninglessness of ritual is derived from the "arbitrarily demarcated boundaries" of purity and impurity; and meaning is predicated on dualism. For Staal, the meaninglessness of ritual is caught in a web of confusion as to how meaning should be sought in the first place.

The source of this confusion in Professor Staal's argument is that he often uses the words *function*, *meaning*, *significance*, and *usefulness* interchangeably. His functional approach is apparent: he says that cultural values (gods, myths, kinship systems and the like) "are most readily transmitted by grandmothers and through language, and there is no need for them to be transmitted by other means" (Staal 1979:8). In point of fact I would suggest that much of the heart of a culture can be transmitted through what it does and how it does it, and I refer the reader again to the comments of Duncan and Le Guin above. How "readily" such cultural values as a sense of mystery and play are transmitted is a matter of interpretation and understanding. Several times Staal describes ritual action as "useless" (Staal 1979:10, 11); he distinguishes readily enough between "ritual and ordinary" activity (Staal 1979:10), which we might understand as a distinction between *sacred* and *profane*.[18] Sacred activity, such as drilling a fire, might be distinguished from profane activity, such as lighting a match, by its *intention*. Intention is as hard to measure as

[17]There are some flaws in the analogy in any case. Let us consider the linguistic category of "voice" on the one hand and the ritual category of "sacred space" on the other. In the first case, we have a distinction between /p/ and /b/ such that /p/ is a bilabial stop [-voice] and /b/ is a bilabial stop [+voice]. In the second case, a distinction between /impurity/ and /purity/ would seem to be determined thus: we would find /impurity/ in blood [-temple] and /purity/ in blood [+temple]. A peculiar way of looking at things. And why Smith thinks that "water is the central agent by which impurity is transmitted" is beyond me; in my experience, at least, water has always been a thing of cleansing, whether in the shrine or in the shower. I grant that another's subjective experience might differ.

[18]*Cf.* note 6, above.

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sacredness: there is certainly a sufficient number of human cultures in which distinctions of sacred and profane would seem irrelevant or even silly (tautological and self-evident at best), cultures which are less self-conscious than is our own, so constantly concerned with the whys of things. The tradition of Buddhist *vipassanā* meditation, for example, might be considered to stress the sacredness of *all* activity in its approach to mindfulness (*sampajañña*). We may be uncomfortable at times with the applicability of terms like *sacred* and *profane*, but it is plain that they are less offensive than *useless* and *useful*. Staal cites Huizinga and Caillois as pointing out the similarities between rites and games, and appears to agree that they "are equally unproductive" (Staal 1979:10). Indeed rite and game are in some cultures very much bound together, as Colin Turnbull so poignantly demonstrated for African and English cultures (Turnbull 1983:23–123, *esp.* 105–08). *Neither* are unproductive, and *both* are essential for the survival of a culture.

It is true that a peculiarity of the Vedic tradition is that the exact and precise performance and pronunciation of the ritual and its texts is vital to the efficacy of the ritual. This conservatism is, however, not the hallmark of a dead tradition, but rather a sign of the tradition's vitality. It is the fact that the rituals were highly respected and valued that they were preserved even when the *earliest* understanding of their origins and purpose may have been forgotten. It is most emphatically *not* the case that Vedic mantras were transmitted without change because they had become meaningless (Staal 1979:12). Rather, though meaning in many instances had become obscured, it was in this instance the *form* which was considered more important. We should not have commentarial texts such as the *Brâhmaṇas* if Vedic texts had been transmitted by men who possessed no understanding of them.

I do not believe that we can agree with Staal about the uselessness of ritual. The most curious fact about rituals, he says, is that they

> are always guarded jealously and with extreme conservatism. This is directly explained by the theory that ritual has no meaning. A useful institution is open; it may undergo change, because efforts are made to render it more (or less) useful. A useless institution is closed; it is not understood and therefore can only be abandoned or preserved. (Staal 1979:11)

We cannot justify the placing of our own utilitarian framework upon a system alien to it. Nor does usefulness equate to meaningfulness. Intentional action can be useful without being particularly meaningful: carrying a bag of groceries, for example, need not *mean* anything; it may be just a form of transportation. On the other hand, an action can be meaningful without being useful: we have all tried at one time or another to offer a handshake even while carrying that bag full of groceries. It is

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very neat to move, as Staal does, from meaning to "'changing meaning' to: 'no intrinsic meaning' and 'structural meaning', and from there to: 'no meaning'" (Staal 1979:11). But such a linear development toward a definition is not particularly convincing. Perhaps it is a mistake to try to *define* ritual in the first place (Staal 1979:8). Describing it is another matter; that is science. But ending up with the hypothesis that ritual *has* no meaning, goal, or aim (Staal 1979:8) is not going to get us very far in our discovery of human religious experience, for clearly if *some* ritual has a meaning, goal, or aim, even if some other does not, then one of the descriptions we are entitled to give to ritual is that it *may have* meaning, goal, or aim; and so the hypothesis that it is meaningless is not meaningful. We can safely say that ritual action is distinguished by its *intention* to deal in some way with what *we* have called the *sacred*. What ritual *is*, is action. It is sound, it is light, it is movement. It need not have *intellectual content* to have *meaning*, though this notion may stretch our definition of meaning somewhat. Indeed meaning derives from connection, in its simplest sense ("dark clouds mean rain"); this common usage has no intrinsic "intellectual content" hidden within. Meaning is meaning, in the vague and wonderful sense we use the word when we talk to each other. In philosophy, we may want to make it small and precise; but in the study of religion, that is a mistake. We have to learn that when we ask "What does ritual mean?", we must immediately qualify our query: "To whom?", "When?", "Why?", and, importantly, "How?".

Professor Staal's structural description of ritual (Staal 1979:16–19) is of some interest, especially for exploring structures within a given tradition or in comparison between related traditions, though I would question how far we might go with it, methodologically. I do not see how a typological, structural ("syntactic") account of ritual in different cultures will tell us any more about ritual as a phenomenon than syntactic analyses of language have taught us about the (to my mind) fictitious "universal deep structure" of human language.[19] Both language and ritual are linear events in time, and as such must manifest themselves sequentially. It seems to me that as a symbol user, early man would have had more luck connecting structured sounds with their meanings if they were ordered rather than random, especially as the system grew more

[19]Attempts (which still continue!) at proving whether VSO or SVO or OVS (etc.) is the underlying template for the syntax of human language , or of given human languages, are based in biological or behavioural determinism. Real speakers always break such rules, and the "transformations" applied to account for this tend to ignore questions of perception (in the sense of the Buddhist *viññāṇaṁ)* and of diachronic innovation (the intermediate "rules" for the transition from synthetic to analytical verbal structures within languages like Welsh or Hindi are never given). *(Cf.* Chandola 1977:4–8, 48–50, 96-98. Chandola makes the distinction between language, which is a function of consciousness—and as such non-linear—and speech, which is the expression of consciousness through language into the physical organism—of which linearity is necessarily a part.)

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complex. "The ritual origin of syntax" (Staal 1979:20) *cannot* stand as a description of the origin of syntax for the simple reason that it separates and segmentalizes facets of human activity which were never separated. Action and sound were always connected; if an early hominid simply happened to point to a piece of fruit and cry out **"Nob!"* 'Give!', and if he or she got the fruit, the connection might have been made. The connection is not ritual, and the addition of an element **yi* 'to me' does not change this. **"Nobyi"* or **"Yinob"* may have served equally well at the level at which Professor Staal seems to be discussing the question (Staal 1979:14, 19–20), and, indeed, in many synthetic languages (like Sanskrit), word order is virtually free. Syntax, and semantics, may be thus subsumed into the pragmatics of human action.

Linear events must, as I have said, have some order to them. Why repetition is important to ritual is another matter. Features of transformational, and even of generative grammar, may be of some use as we develop a typology of ritual action. Ritual activity does embed, and it does modify (Staal 1979:18–19); but the derivation of rules for determining (read: "predicting" *à la méthode scientifique*) that process is doomed to the failure of other behaviourist or determinist approaches to human activity.

Professor Staal says that a syntactic analysis of ritual "demonstrates that the assumption that rituals express meanings like language is not only unnecessary, but inaccurate and misleading" (Staal 1986:43). But meaning and language are not identical. Language (or speech) is but one way of expressing meaning. Meaning, as may be guessed, is a matter of pragmatics and of the subjectivity of human experience. It may be expressed in symbolic representation, simple or complex, such as art, song, speech, poetry, dance, or formal and elaborate ritual. These expressions *need not* express meaning in all instances.[20] I think that, typically, they do. But it should be said that I myself believe that life is meaningful, or at least meaningful to us, which, subjectively, amounts to the same thing.

I am neither shocked nor depressed that Professor Staal has pronounced ritual to be complex and meaningless. It is complex, and full of significance, since it is a tenacious and vital part of human activity. What meaning ritual has may be intuitive, symbolic, subjective, and ineffable. But meaningful it is. Our business as students of religion is to understand how ritual is meaningful; how it assists us in expressing ourselves and our relation to our world and to the Transcendent; and how its ubiquity reflects the fundamental human need to symbolize and express

[20]Consider such expressions as abstract art, syllabic chanting, glossolalia, or Velimir Xlebnikov's experiments with poetry. Meaningfulness here may be a matter of interpretation. Elaborate, formal ritual still seems to me to convey some meaning (again, a matter of interpretation), even if that meaning *cannot* be reduced to words.

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our relation to what we understand as the Transcendent. It is in the final analysis a matter of human culture, enacted by men and women, sometimes alone, more often in community. It is therefore a question of subjective experience. As we describe it, soberly, and as objectively as we can, we are describing the real experience of a real person or group of people. As we describe, we are expressing our own subjective experience of "the other". Recognition of this essential fact frees us to step back into a more objective viewpoint, and thus we can begin to make real progress in the study of human ritual expression.[21]

We all of us know times, places, and deeds which are for us *sancta sanctorum*. The forms of religious festival, architecture, or ritual reflect somehow this basic fact: that the Transcendent and we have something to do with one another. Like it or not, we run into the Transcendent whenever we look at religious matters. I don't think ritual is arbitrary. I think we might find fruit in looking at ritual in the Light of the Transcendent. Will this endanger our objectivity? It can be argued that the theologian, not the historian of religion, should be interested in the Reality of God. The exegete, not the hermeneut, is in the business of apology and conversion. But don't we students of religion still have to take a theologian seriously when we look at one? No one requires us to "believe" that in the Transubstantiation the bread becomes flesh, or that in the Darśapūrṇamāsesṭi the priest becomes God.[22] But we have no choice: we must take our documents seriously or we have no business looking at them.

We cannot afford to think of the people we study as though they were not our brothers and sisters. We cannot allow our conceptual categories to be equated with theirs. We *may* not gloss over the Transcendent as though it were not there. When we have tried these things before, we have led ourselves to think that ritual is meaningless, or some weird abstract way of creating social power. Common sense tells us that this is not the case. What *is* a right way of approaching things, then?

We turn back to Eliade on this point. We remember that we act. We live in space. We count time. We notice that some of our spaces are not the same as others, that some times feel differently from others, that our actions too lack *homogeneity*. We love, we hurt, we touch, we laugh, we nurture, we kill, we cry. When we do these things we are amazed. The feeling for the numinous is not that rare thing which makes some people into *homines religiosi*. It is what makes us *all* human. *Homo sapiens sapiens* is identical with *homo sapiens religiosus*. If the scholarly study

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[21] For a view on this in other directions, *cf.* Geertz 1983:49–54.

[22] *Cf. Śatapathabrūhmaṇa* 1.1.1.4, where the sacrificer with his vow moves from impurity to purity: सत्यमेव देवास अनृतं मनुष्या इदमहमनृतात्सत्यमुपैमी ति तन्मनुष्येभ्यो देवानुपैति ॥ *Satyam eva devāanṛtaṁ manuṣyā. "Idam aham anṛtāt satyam upaimi" 'ti tan manuṣyebhyo devān upaiti.* 'Indeed truth is the gods, untruth humanity. [Saying] "Now I pass from untruth into truth", he passes from humanity to the gods.'

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of religions has taught us anything, it has taught us this.

It is time for us open a window and let the breeze clear out the musty halls of positivist objectivism. How else could we properly study the vitality of human religious expression? This is the challenge which we must face as we take our discipline from the nineteenth century into the twenty-first. Our teachers taught us much in the way of better methodologies; but what does not work ought not be passed on. We, after all, are the teachers of the next generation.

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AN INTRODUCTION TO "THE FUTURE OF MAN"

Sir Cyril Burt F.B.A, D.Litt., Ll.D., D.Sc. (Deceased)

Prior to 1970 I wrote a book explaining how we could have many more bright, self-sufficient and possibly creative people in our society. The manuscript went first to Raymond B. Cattell, who referred it to Hermann J. Muller. After Muller's editing he sent it to Sir Cyril Burt, who was happy to find a book congenial with some of his own views.

One of the major proposals in the book was the implementation of Muller's concept of repositories for germinal choice. Since 1980, when it was activated, this one project has produced more than 100 offspring of leading scientists. These are in addition to the scientists' own families and would not have been born without the intervention of the Repository.

While the book – *The Future of Man* – was still in manuscript Doctor Burt enthusiastically wrote an introduction to it. However, because this was almost as long as half the book and far more erudite, he kindly wrote a much shorter and more appropriate introduction which was used instead. Burt's first and most elegant introduction – a truly inspiring essay in itself – lay dormant until *The Mankind Quarterly* discovered the manuscript and herewith publishes it.

Robert Graham

The purpose of this book is to make a comprehensive survey of man and his development – past, present, and future; and in it the author discusses in scientific detail what the human race is now in a position to attempt with a view not merely to continuing its previous progress, but accelerating it. With this aim in mind he has undertaken first of all to review and summarize the vast array of factual evidence already accumulated which may help us to determine what are man's specific potentialities, in what ways those potentialities are limited, and what have been the varying conditions which have hitherto aided or hindered their progressive realization.

The object of his investigation is thus not so much theoretical as practical. He himself has the advantage of a wide practical experience; and it is as a practical man that he embarks on his task. Now, the attitude of

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practical people towards human problems is necessarily very different from the attitude of the scientist. Accordingly it may be well to remind the reader at the very outset of the logical consequences of this difference in view-point. They are inevitable consequences which the scientific critic is all too apt to forget. And for this reason a brief preliminary defence of the mode of approach which Mr. Graham has adopted seems desirable, if only to forestall a host of minor objections which would be quite irrelevant in the present context.

The immediate need of the scientist is to prove things, whereas that of the practical man is to understand things. His problem is to decide on a detailed policy; and for such a purpose a working understanding rather than an impeccable proof is the first prerequisite. The practical planner, therefore, must be prepared to accept bigger risks. The scientific theorist knows he will expose himself to sharp criticisms from his colleagues if he puts forward any conclusion which is not as near to demonstrable certainty as an empirical conclusion can be. Hence he starts by applying Occam's methodological razor, and cuts down his initial unproved assumptions to the barest minimum. The framework within which he works – his 'world-image' as the German scientist would call it – is consequently far simpler than that of the social or political practitioner. The conception of the universe that he has at the back of his mind was succinctly summed up by a late nineteenth century physicist as follows: "one kind of elementary substance, namely matter, consisting of one kind of elementary particle with only one elementary property, namely mass, capable only of one type of elementary process, namely change in spatial location with passage of time (or in a single word movement), resulting from only one kind of force, namely mechanical force (or at least forces which all are reducible to mechanical forces), and operating in accordance with one universal law – the law of strict causal determination". In short, he pictures the cosmos as a gigantic machine. His final ideal – an ideal which numerous physicists from Newton and Laplace to Einstein and Heisenberg have hoped to achieve – is a single universal formula, something like Lagrange's celebrated equations, from which an omniscient observer could deduce both the past and the future of the whole universe. With this simple set of assumptions we can undoubtedly go a long way – particularly if we limit our investigations to what may be called man-sized phenomena – things possessing such magnitudes as we can perceive with our own unaided senses and moving with such speeds as we can follow with our own unaided eyes. But what these ultra-cautious postulates

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describe is not the concrete world as it is, but an abstract model of the world such as can be handled mathematically. One cannot think of oneself as *living* in such a model.

And so, when we turn, as Mr. Graham has done, from the scientific study of the laws of nature to the study of the history of mankind, we find ourselves in an entirely different context. We are no longer watching a hugh clockwork mechanism, unwinding surely and inexorably towards a predictable finish, in which at any given instant every tick and every motion is predetermined, with no conceivable alternative; we seem rather to be watching a great drama – a drama of the modern type in which the spectators themselves are invited to play an active part. At almost every stage more than one alternative is possible. Which of the various alternatives is actually realized depends largely on ourselves. In the past it has depended, as often as not, on pure chance. In his book on *Chance and Destiny: Turning-Points in American History*, Oscar Handlin has vividly described how frequently the zigzags of the human story have been decided by sheer accident. "Too often the turning points have been made of such stuff as these: a shifting wind or a courtier's whim, a woman's greed or an old man's forgetfulness, a soldier's blunder or the failure of a piece of metal." But accidents themselves are the wise man's opportunities. Mr. Graham reminds us that Nature herself has proceeded by making the most of chance variations; and what Nature has done, slowly and blindly, man must do with his eyes wide open and of a clear set purpose.

And today we need no longer fear that the scientist will step in to assure us that it is all in vain, since "what will be will be, and we have no choice". Even in the material world, every radioactive atom has two courses open to it – to continue as it is, or explosively to emit an alpha or a beta particle and add another step towards radioactive decay. And the quantum physicist maintains that, "no force, either external or internal, known or unknown, can eliminate this element of indeterminacy – of choice or chance". One such change may cause the mutation of a gene; one such mutation may produce a new type of individual; one such individual may have it in his power to give a new fillip to the course of history.

What is more, each of the physicists I have just named was eventually forced to acknowledge that there are certain stubborn facts which themselves defy reduction to terms of the elementary concepts of nineteenth century materialism. The most obvious is the fact that the scientist himself is an observer and a thinker, and usually an experimen-

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talist as well: he possesses – what no mere machine could possibly possess – the property of consciousness; this enables him to perceive and observe and, to think and reason about the things that he perceives, and within certain limits) to manipulate them according to his own conscious purposes. In spite of the varied and ingenious attempts made by a succession of physicalists and behaviorists, it has proved quite impossible to reduce consciousness – in the sense of simple awareness – to material or physical processes. The older materialist constructed his attractive scheme by the simple device of ignoring the observer – a device which, as the modern relativists and quantum physicists confidently assure us, can no longer be sustained, except where merely approximate conclusions are concerned. The convenient blinkers which the nineteenth century physicists donned on professional occasions, have therefore to be discarded.

Human psychology, the branch of science with which Mr. Graham is chiefly concerned, is one of the oldest of the sciences; and it began as a systematic study of consciousness as such. However, one of its most recent discoveries has been the detailed knowledge of the close relations between man's conscious processes and the physiological processes going on in his material brain. The nineteenth century materialist was naturally tempted to maintain that these relations must be causal: the brain, he declared, must somehow or other *generate* the processes of consciousness. And, as psychology changed from a branch of philosophy to a branch of natural sciences, there was a widespread inclination to treat psychology as no more than a special branch of physiology. As a result the behavioristic school, which developed on the continent and in America, has resolutely sought to formulate all psychological conclusions in purely physical terms, banishing any type of exposition which might involve such concepts as consciousness, mind, choice, or purpose. In Britain psychology has been regarded rather as a branch of biology; and biology – particularly the evolutionary biology that started with Spencer and Darwin – expressly accepted the notion of 'purpose' in a modified form of 'function'. Accordingly it will be, I imagine, not from the biologists or the geneticists, but rather from psychologists of the behavioristic school that the criticisms of Mr. Graham's proposals will chiefly come.

The old-fashioned type of psychology concerned itself mainly with observations carried out by the observer on his own inner states of consciousness, i.e. with self-observations. The behaviorist is far more interested in the observation of others. He studies human nature solely

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from the outside. It is, so he contends, impossible to secure any direct or foolproof evidence about the consciousness of other persons. Consequently in conformity with the requirements of a rigorous methodology, we must once again invoke Occam's razor to shave away all such hypothetical and inferential concepts as the consciousness of the other man, and the various supplementary notions depending on that dubious assumption – 'choice', 'purpose', and 'will'. Indeed, when we try to analyze such notions, it is found, we are told, that they create more difficulties than they solve. However, to assert that there is no cogent evidence for an assumption is by no means equivalent to asserting that there is cogent evidence against it. It merely means that we cannot use such an assumption as a basis for satisfactory proof. "If", says the behaviorist, "you tell me you are conscious of pain, I need not go out of my way to contradict your statement; I only insist that for me your statement is just an observable bit of your outward behavior". And accordingly (if I may borrow a phrase from Martin Buber) the behaviorist insists that, instead of the 'I and Thou' approach of ordinary social intercourse, our discussion of psychological problems must adopt the orthodox 'I and It" approach of the objective scientist.

Now, so long as we restrict our aims to securing cogent theoretical proofs for the abstract generalizations of science such caution is admirable. Yet it is quite impossible to keep to it when we turn to the concrete problems of everyday life. "Even the most thoroughgoing determinist", says Dorothy Sayers in one of her stories, "Will swear at the lab boy when he drops a test tube or turns the wrong tap": in spite of his methodological scruples, he tacitly assumes that the boy *could* have acted otherwise. Thus, when we are concerned with practical affairs, it nearly always proves necessary to introduce a number of supplementary, and often purely tentative, assumptions, basing them so far as possible on an assessment of their relative probabilities. This is the approach that Mr. Graham has adopted. The logical positivist will doubtless feel tempted to challenge many of his statements on the ground that they can neither be tested nor checked. But that is inevitable in formulating any line of conduct. We could plan no campaigns; we could fight no battles; we could not even carry on our daily business, unless we were prepared to risk the possibility that many of the things we were pragmatically assuming would turn out to be wrong.

There are two essential steps in Mr. Graham's contentions which are especially likely to provoke objections of this type. Let me therefore briefly indicate where they arise. First of all, the very attempt to discuss and

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decide on a course of action which shall aim at the betterment of the human race and the conditions under which it lives, implies a tacit assumption that we *can* make a genuine choice, and that we *do* possess a set of values such as will furnish objective criteria for judging the goals at which we are to aim. Unfortunately, until quite recently, the prevailing trends in the physical, biological, and psychological sciences have tended, at least in the popular mind, to stultify all such assumptions. We live, so the materialist repeatedly assures us, in a universe which is wholly indifferent to man's aspirations and happiness: what the older philosophers regarded as objective values – goodness, beauty, and truth – are merely subjective creations, dependent on the arbitrary approval of each particular individual or of the society in which he lives and moves. In any case, if, as both Watsonian behaviorists and Freudian psychoanalysts declare, all our actions are mechanically determined, and our impressions of choice and free will are baseless illusions, then it is useless to strive against our fate. "In the universe as we come to know it", says Camus, "man is an outcast and a stranger, and his exile is without remedy, for he has been robbed of all hope of a promised land" (*The Myth of Sisyphus*).

This pessimistic skepticism is still widespread among many members of the educated public; and it is a mood that we must overcome if we are even to think of following Mr. Graham's prescriptions. The cynic no doubt will retort that this is just whistling in the dark: it means reviving dead and discredited metaphysical superstitions just to give ourselves Dutch courage. But it is time that we frankly recognized that both the cynic and the pessimist are hopelessly out of date. The materialistic and deterministic doctrines which prompted these fatalistic lamentations are themselves now seen to have been baseless metaphysical dogmas – temporary methodological rules wrongly mistaken for axioms about the world at large. And both physicists and psychologists have already begun to discover that, even as methodological principles, they have ceased to work. Unhappily there is in these things a well marked time lag: what the educated public supposes to be the latest findings of science nearly always turn out to be the notions of the scientists of the generation just past, which, as often as not, the current generation has already abandoned. It is true that the objectivity of values, the possibility of genuine choice, and the conceptions of purpose and free will are not things that can be irrefutably proved by empirical evidence. They are assumptions rather than inferences, based on direct experience rather than reason or argument. But they are assumptions which we must be ready to accept if

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we are to listen to Mr. Graham's contentions in the chapters that follow.

Mr. Graham's second set of assumptions are likewise in conflict with the behavioristic psychology. He reminds us that, even in highly educated and civilized communities, human beings differ widely in their mental characteristics, and that their mental differences, like their physical differences, are the result partly of their material, cultural, and social environments, and partly of innate and hereditary tendencies.

Unlike all other species, man is by nature endowed with the capacity to improvise his individual adaptations to the circumstances in which he happens to find himself. When lowlier mammals wandered into the chilly North, they failed to survive until by the cumulative effect of accidental – variations they had developed fur coats as part of their natural structure; man makes and dons an artificial overcoat. Before birds could fly, they had to wait until they had changed their forelimbs into wings; man builds an aeroplane. And so with the dawn of civilization further evolution of man's innate abilities virtually ceased; instead, a far more prompt and effective mode of progress came into operation – the conscious acquisition of knowledge and skill and the transmission of the results, not by biological inheritance, but by social tradition. Not every member of the group invents the new idea for himself, but only some primitive genius; and through imitation, education, or verbal communication, the idea is passed on to all. Henceforth the new adaptations are stored, not in man's hereditary structure, but in his cultural environment. But, of course, this does not mean that all genetic variation has ceased.

It is true that in democratic countries the chief, if not the sole, emphasis is popularly placed on the social and environmental factors. We *know* that the cultural environment exercises a powerful influence; and we *know* pretty well how that environment can be changed. On the other hand, even if we acknowledge that heredity continues to play a part, we do *not* know (so it is commonly said) whether its influence is really important, still less in what ways it acts. It is readily admitted that, as a rule, the less intelligent and less self-restrained members of the population produce the larger families, and have done so for many years. Nevertheless, we are told, there is no conclusive evidence that this in any way affects the innate quality of the population as a whole.

The answer is that in practice such questions can hardly be decided on the narrow basis of what we already *know*. Once again we have to weigh probabilities. Nor is it sufficient to take into account only the hypotheses with the highest probability: we must also have an eye to the gravity of the

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different issues that may be at stake. Though the probability of a particular mishap is comparatively low, yet, if the effects would be both grave and irreparable (such as fire or sudden death), the prudent man is ready to insure heavily against it; if, on the other hand, the effects would be relatively trivial (as the loss of an umbrella or a purse), then, even though the likelihood is much greater, we are willing to face the risk. Now a general decline in the innate mental endowment of the general-population would be indeed a grave and irreparable result. Consequently we must look closely into the whole problem. And this, Mr. Graham maintains, is what so far we have neglected to do.

When we do so – when we examine the relevant data chapter by chapter as he sets them out – then, although I am prepared to admit that the evidence is only a matter of probabilities, nevertheless its cumulative effects are impressive. Most of it has come to light during the last few years, and remains buried in technical papers published in inaccessible journals. As a result the popular notions about mental differences and human heredity - even among educated persons – are stilt very largely erroneous and almost wholly behind the times.

Let me, as a psychologist, very briefly summarize the evidence so far as it is available. What we usually describe as mental characteristics are of two main kinds: cognitive or, as I prefer to say, directive capacities (for they include practical as well as merely intellectual abilities) and conative or dynamic capacities (roughly what are known as emotional and moral characteristics). Among both we may distinguish those that are more general and those that are more specific. Thus on the 'directive' side there appears to be an innate, general, cognitive ability, which Binet (following Spencer) called 'intelligence' – giving the term a far more restricted meaning than is customary in popular parlance. A mass of converging evidence drawn from various sources strongly suggests that differences in this general capacity results from the individual's genetic constitution. The most convincing data are derived from comparative studies of identical twins brought up in different homes.

We now know that practically all innate characteristics are transmitted in accordance with Mendelian principles. From this it follows that not only the resemblances between members of the same family, but also the differences may be the effect of genetic constitution – a point that is not commonly realized. Further, most graded characteristics – 'intelligence' proves to be unexpectedly wide: it varies from that of the dullest idiot in a mental institution to that of a Leonardo or a Shakespeare. The pool of

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genes from which each individual draws his own assortment is made up partly of those carried by the father, and partly of those carried by the mother. Thus a wide diversity of combinations and re-combinations is conceivable, even for the children of a single parental pair.

An acquaintance with these simple facts has enabled breeders of livestock, crops, and garden flowers to develop entirely new varieties with qualities which no farmer or horticulturalist a century ago would have thought it possible to produce. To give but a single instance picked out almost at random: about 7 percent of all the milk cows in the U.S.A. are enrolled in one or other of the associations for the improvement of dairy herds established some 50 years ago; these cows produce at the rate of about 9,700 lb. of milk containing 380 lb. of butterfat – roughly double the average rate and quality achieved at the end of last century: the national average is approximately 6,000 lb. containing 240 lb. of butterfat. Whether we are concerned with animals or with plants the guiding principles are much the same. By continually crossing widely different stocks, that is by outbreeding, the geneticist can obtain a great multiplicity of types, sometimes uniting the chosen qualities of the parental stocks, sometimes as a result of re-combination displaying entirely new and unsuspected characteristics; from these, by deliberate selection, he can secure a novel variety superior to anything nature has previously supplied: and finally, by inbreeding for several generations, he can stabilize the type he has selected.

We have every reason to believe that the same principles apply to man that apply to all bisexual animals, and to man's intellectual and temperamental qualities as well as to his physical characteristics: for in the last resort the basis of such qualities is a physical or a physicochemical structure. We must, however, remember that what are transmitted are not the qualities as such, but only the genes – i.e. the tendencies or potentialities. Thus a man's genetic constitution may set an upper limit to his intellectual achievements, but whether or not his full potentialities are actually realized must depend on conditions obtaining after he has been conceived – that is to say, on prenatal conditions during embryonic growth, and most of all on the postnatal or environmental conditions during the earlier years of independent life.

We can trace the way the genetic principles operate when we investigate the rise and fall of certain stocks or families, of social classes or groups, and of the great civilizations of the past. In each case a plurality of convergent causes has nearly always been responsible. Nevertheless,

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changes which tended to alter the genetic pool of the total stock often seem to have played the dominant role. Consider the intriguing problems raised by what historians have taught us to call the 'centuries of genius'. The first and the most remarkable was the century which lasted from the battle of Marathon to the death of Socrates (490-399 B.C.). Bring that period Athens, with a population of under 70,000 freeborn males of adult age, produced fourteen men of the highest intellectual eminence – a proportion of 1 in 5,000, whereas the number of geniuses of equal merit among other civilized nations averaged throughout the centuries less than one in several million. Certainly, during the whole of the Periclean age, as well as the almost equally brilliant eras of Elizabeth I and Victoria in Great Britain, and the seventeenth century in continental Europe, there were numerous geographical, historical, intellectual, and political factors concurring. But consider what had gone before. From about 1500 B.C. onwards for several centuries, the Greek peninsula had been invaded by a succession of newcomers of different stock, each itself very frequently mixed. The ensuing battles and the general struggle for survival had exercised a rigorous selection. Deliberate infanticide – the exposure of physically or mentally defective offspring – was practiced on a widespread scale. And gradually, in the more fertile valleys sharply cut off from each other by mountain ranges or deep inlets from the sea, the various city.states developed. There were thus, roughly speaking, three overlapping stages in the whole preliminary process – first outbreeding, then selection, and finally inbreeding; and the effects of the three, together with political and intellectual crises that followed, go far towards providing an answer to the problem.

To suggest explanations for the rise of dominant nations may seem comparatively easy. Gibbon, musing among the ruins of ancient Rome, found it harder and more urgent to account for their decline and fall. Once a civilized society has established and organized itself, how does it ever come to pass that in the course of another brief period it fails in competing for survival with one or other of its less civilized neighbors? Faced as they themselves were with this very problem in the course of their own lives, Plato and Aristotle both maintained that the success or failure of a state as a state depended first and foremost on the character of the men who govern it. A state may be governed by one, by a few, or by ail (or at least the majority); and their powers may be exercised, says Aristotle, "either for the private benefit of those who govern or for the general benefit of those whom they govern". In the latter case the

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constitution may take the form of a 'monarchy', of an 'aristocracy', or of a 'polity'; in the former case it becomes a 'tyranny', an 'oligarchy', or a 'democracy'. Aristotle himself held that the best attainable type of government was a 'polity' – his name for a constitutional government of the people by the people for the people. Plato argued that the best form was an aristocracy – government of the people for the people by the best members of the state; and by the best he meant those who were at once the best in character and the best in efficiency. Representative forms of government did not enter into the purview of either of these writers. Both, however, emphasized supreme importance of high qualities of character in those who exercised the actual power. Unfortunately, as Plato himself relates, the freedom, the security, the life of comfort and enjoyment which the vigor and efficiency of the ruling citizens have step by step succeeded in gaining for all bring with them special dangers of their own. Security, comfort, and enjoyment are most readily accessible in towns. But, unlike the country, urban conditions seldom make for the preservation of either physical health or lofty moral standards. The less intelligent inhabitants who were formerly poor and downtrodden now begin to multiply; and when all are free, the day-to-day government tends to pass into their hands simply because the less intelligent are the more numerous. Being less intelligent, they are more suggestible; and thus easily swayed by any sufficiently skilful and unscrupulous leader of a gang of selfish seekers after power, 'demagogues', as Thucydides calls them, who promise the multitude the food and the entertainment they desire, and, thinking only of the present, care little for the future of the state itself. And the remedy for all this? Plato's twofold prescription has a decidedly modern ring – selective breeding and improved education.

Much the same changes can be discerned in the period preceding the decline of each of the great civilizations of the past about which we have reliable information. The story of imperial Rome was very similar; and Cicero, Tacitus, and the satirists tell much the same story. Cicero significantly observes that at Rome "the lowest of the citizen classes were called the proletariat, because their only contribution to the state was their proles (their numerous offspring)". And Augustus introduced a series of laws to check the diminishing numbers of the patrician class by imposing taxes on bachelors, forbidding senators to marry below a certain rank, and granting substantial privileges to those with three or more children. But all to no avail. Two things alone, says Juvenal, would satisfy the dominant masses – *panem et circenses*, food and the spectacular amusements of the

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circus: on these more money was lavished than on either the army or the administration. Horace sums it up in his well known lines:

> Aestas parentum peior avis tulit
> Nos neguiores, Mox daturos
> Progeniem vitiosiorem.

And more than one philosopher of the 'new academy' maintained that Plato's prescriptions for his ideal republic should be enforced for Rome, usually with the dry addition that no such recipe was ever likely to be put into effective practice.

No doubt the Greek political philosophers oversimplified both the conditions of their time and the policies they discussed. And the conditions of our own day are infinitely more complex. Nevertheless, these two great thinkers, just because of their simplifying insight, succeeded in picking what are the essential ingredients of all such situations. One point Plato's discussion particularly makes clear. The various *external* causes – numerous, insidious, and obscure as they often are – constitute no more than accessory or precipitating causes. However adverse they may be, a nation that consists of a hardy, intelligent, and energetic population, guided by hardy, intelligent, and energetic leaders, "always seeking", as Aristotle puts it, "the good of the community rather than themselves", will nearly always emerge victorious from every struggle, social, military, or economic. On the other hand, when the health, the intelligence, the industry, and the self-discipline of the nation begin to wane, no amount of legislation, education, social or political reform is likely to save it.

In Britain Plato's policy of 'eugeneia' (good breeding) was praised and advocated by many political writers long before Galton coined the word 'eugenics'. It may be that in an isolated island community, where freedom of political speech was claimed from the earliest times, the basic principles could be more clearly detected and more frankly proclaimed. More than one of the early English historians observed how, in spite of the progress made in many directions, certain dysgenic factors tended at times to operate on a terrifying scale. In war it was the young, the brave, the chivalrous who were first to fall. Pestilence attacked with greatest severity the inhabitants of the town, who usually include the nation's ablest citizens. It was the ablest, the most daring, and the most original minds that were liable to be exiled by the state or persecuted by the church: the safest place for the man of intellect was a monastery, where celibacy

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ensured that he left no descendants. Mr. Graham continues the story by pointing out how the deliberate slaughter of the ablest members of the state which, so history tells, happened again and again in ancient times, has occurred in Germany, in Russia, and in China in the present century. We ourselves have learnt only too well how the hand of the fanatic is more likely to strike down the beneficent ruler than those whom all the world hates or dreads.

On the whole, however, the English commonly assume that they are, and have been, far less subject to these internal calamities than other nations. Galton indeed, with his characteristic optimism, went so far as to declare that "if a man is endowed with high ability, sufficient energy, and a firm concentration of purpose, he is almost certain to make his way to the top: genius, like murder, will out". And certainly numerous cases could be cited to show that neither poverty nor a humble home invariably present a fatal obstacle to effective achievement. Nicolas Breakspear, the only English pope, was the son of a shepherd, Wolsey of a grazier, Thomas Cromwell of a blacksmith, Knox of an East Lothian peasant, Spenser of a clothier, Marlowe of a shoemaker, Pepys of a tailor; Edward Stone, a gardener on the Duke of Argyll's estate, became one of the most famous mathematicians of his day, and a Fellow of the Royal Society: the list could be continued with increasing numbers down to the present day. Other countries can instance similar cases: Kepler was the son of a drunken innkeeper, Gauss the son of a bricklayer, d'Alembert a foundling picked up one Christmas Eve on the snowy steps of a Paris church. Nevertheless, when we look more closely at the early stages of these various success-stories, we discover that there was usually some lucky circumstance that helped their early rise. Kepler owed his education to the Duke of Wurtenberg; Gauss to the Duke of Brunswick; Faraday, the bookseller's errand boy, read the books in his employer's shop, and secured from a customer a ticket for Sir Humphrey Davy's lectures. And we may fairly suspect that there must have been many "village Hampdens" and "mute inglorious Miltons", equally gifted, "whom fortune failed to favour, and who died with all their music in them".

In Britain the need for special assistance for the children of outstanding ability was early recognized. In 1378 William of Wykeham, himself a man of lowly origin who had risen to be "the wealthiest subject in the kingdom", endowed "a college for seventy poor scholars": its statutes explain that its purpose was to repair the ravage caused by the Black Death among the higher orders in the church, and that special care

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should be given to the selection of boy – preeminent in talent and character. After the Reformation a still more eager search was begun by the leaders of both church and state for potential scholars, who might fill the ranks of the clergy and the civil service. The rich and the powerful took a pride in patronizing youths of promise. In this way a scholarship system grew up; and, towards the close of the 19th century when the task of universal education was taken up by the central and local governments, a scheme of scholarships with grants for maintenance became an accepted policy. In 1913 an intensive school survey that we carried out in London demonstrated that there were many gifted children from poor and uncultured families in the slums, who undoubtedly deserved a scholarship, but failed to pass the authorized examination in reading, English, and arithmetic; and accordingly a supplementary system of intelligence tests was introduced to improve the method of selection. As Psychologist to the County Council it was part of my regular duties to devise such tests and to keep a record of the after-histories of the candidates. I could name many individuals who were thus started on a career of higher education, and today are professors, leaders of business, high-ranking civil servants, and even cabinet ministers or Fellow of the Royal Society.

As a result of these and other psychological inquiries undertaken during the last fifty years I could quote a good deal of concrete evidence (much of it published in the Council's Reports) which goes far to support Mr. Graham's arguments. In the course of our school surveys, with the aid of the Council's social workers, we took special note of the type of home or family from which each child came. We found that families which included a scholarship winner contained (on an average) 2.3 children, whereas those which included one or more mental defectives contained 4.7 – more than twice as many. A little calculation showed that, if we took such figures at their face value, they would imply a fall of about 1.9 I.Q. points in each successive generation. But of course a simple armchair deduction, such as this, is far from reliable. The processes of genetic transmission are far more complicated than a simple inference of this type tacitly assumes. Several attempts have been made to check such deductions by direct assessments based on surveys carried out at successive intervals of time. But here too we encountered serious difficulties. A change of only 1 or 2 I.Q. points in the general average is far too small to be verified with anything like assurance. Allowances have to be made for the immigration and emigration of certain families, and for the fact that during the intervening period teachers and children had become far more

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familiar with the performance of such tests than they were at the outset. Above all, an interval of 20 or 30 years or so is far too short to determine any definite trend with the precision required. On weighing the various lines of evidence we came eventually to the conclusion that, in the course of a single generation, there had been in all probability a decline in the average level of the London population amounting to at least 1 point, but not more than 2 points. In the rural districts, however, the decline usually appeared considerably larger. But it should be noted that a downward shift of only 1 point in the general mean would have a marked effect upon the numbers in the tails of distribution. If we take 70 I.Q. as a borderline for the subnormal, the proportion of such cases would be increased from 2.3 to 2.7 percent; with a borderline of 130 I.Q. for scholarship winners, it would be reduced from 2.3 to 1.0 percent. And, if this trend persisted through one generation after another, the effects would quickly mount up: in about three generations the "number of scholarship winners would be halved.

But it is not sufficient (as is commonly done in discussing these issues) to confine attention to the effects of the differential birth-rate within our own nation or country, whichever that may be. We must also take note of the population trends in all the countries of the world. The graves danger – and it is this that Mr. Graham wishes to emphasize above all else – is not just a decline in this or that civilized society, but a decline in the genetic endowment of the whole human race. We have already seen one such disaster, namely, that which occurred during the Dark Ages; and it took Europe centuries to recover from it. Accordingly, on the current discussions about the world population, let us bear in mind that the problem is one of quality as well as of quantity.

Admittedly these grim forebodings are highly speculative; yet one thing, I believe, we can affirm with absolute confidence. Whether or not our readers feel inclined to endorse Mr. Graham's conclusions, they must surely agree that he has made out the strongest possible case for focusing both public and scientific attention were sharply on the whole problem. He indicates in detail what he believes to be the current effects of the increase of the less intelligent – the cult of mediocrity, the increase in juvenile delinquency and crime, the gradual multiplication of the dull, the backward, the mentally defective, and others who in an age of technology are unemployable. What is more, he points out the ways in which such deterioration (as he believes it to be) may be arrested, and what benefits would accrue.

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Certainly in our eagerness to improve the lot of our own generation, we tend to close our eyes to the possible effects of our various measures on the generations still to come. The overall efficiency of the individuals who make up a state of a nation must in the last resort depend upon its chromosomal pool. Improvements in material, educational, and social conditions no doubt confer welcome benefits on those immediately affected; but of themselves they can ensure no permanent effects. On the other hand, alterations in a nation's genetic constitution are likely to prove irreversible. In my own country, and indeed all over the world, the last half century has witnessed radical modifications in the traditional conditions that regulate the various mating systems, and in the social incidence of human fertility. The expansion in transport facilities, the increase in individual freedom, the new modes of production, the changes in the educational ladder, and above all the progressive reduction in the barriers which separate different social classes, different economic groups, and different races – all these are visibly transforming the characteristics of the various human breeds. Almost inevitably they must be affecting the genetic constitution of what have hitherto been the dominant nations and the dominant stocks within those nations. Our growing knowledge of the physiology of the reproductive processes – leading to novel methods of birth control and, it may be, to the possibility of correcting even genetical effects – are bound to complicate the problem yet further. How far they may operate for good or for ill we still cannot say. Hence the two crying needs of the moment are first a more resolute organization of scientific research, and secondly a general awakening of popular interest in the far-reaching issues which are involved. It is for these reasons that I should like to press, as strongly as I can, the arguments that Mr. Graham has educed on the earnest attention of the public.

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REMARKS ON NUTRITION AND DEMOGRAPHIC CHANGE IN AFRICA

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The aim of this paper is to survey the level and structure of nutrition in the light of demographic changes in African countries in the years 1960-1985. Africa contains a widely difference variety of geographic and climatic zones. The Mediterranean zone covers the north shores of Maghreb countries, and the climate is similar to that of the South-European countries. Similar also are the agriculture and horticulture, with vineyards, olives, almonds, and figs being cultivated throughout the whole area. The Mediterranean countries are the fatherland of the evergreen *makhia*. The climate has characteristically dry, rainless summers and wet, rainy winters. Unfortunately, the hot sirocco wind blows from the desert to the detriment of plant cultivation over vast areas up to the sea shore.

However, the Atlas mountains protect the sea-shores from the desert. Kserophylic vegetation in the Atlas region includes the evergreen woods pine, fir and cedar. Two thirds of the area of the Maghreb is desert with continental influences. For part of the year small lakes appear at the bottoms of valleys, but during dry times these are converted into salt basins, known as *shotts*, around which mangrove shrubs grow. The green vegetation is replaced by grey.

Beyond the Atlas mountains there is a semidesert area on which alfa grass is to be found. The breeding of cattle, sheep, goats, camels, horses and mules is the traditional occupation of the nomads and semi-nomads who inhabit this area. Periodical droughts substantially reduce the size of the cattle herds. But the desert vegetation is characterized by well developed root systems, which in kserophylic plants reach 20m down into the earth. There are also some perennial plants, the seeds of which retain their germinating power even under adverse conditions. In places where the ground water comes to the surface, oases sustain date palms and crop cultivation is possible.

Sparse seasonal vegetation can be found on the periphery of the Sahel. The basis of subsistence for the population living there is sheep

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herding, hunting and the cultivation of sorghum, millet, maize and ground-nuts. Twenty percent of the world supply of ground-nuts is from Senegal and Nigeria.[4]

On a worldwide basis, the production of plant crops is of the greatest significance. In the years 1960-1985 crop production increased from 934 million tons to 1695 million tons – that is by 81%. At the same time the world population increased 50%. This represents and increase from 313 kg per person in 1960, to 370 kg per person in 1985. The difference in the productivity of the various regions and cultures is immense, with some regions producing much more than others.[4-5]

Numerous different varieties of wheat are cultivated in Africa, although none are produced in the deserts or high mountains. But while the average yield of wheat in Europe ranges between 40 to 50 q/ha, in several African countries the production is as low as 10 and 15 q/ha. The highest wheat yields in Africa are in Egypt, Zambia and the Republic of South Africa. In monsoon regions, in the subtropical zones and in areas of irrigated deserts rice is the main African crop. Because of the rapidity of rice propagation under suitable conditions, two or even three crops per year can be harvested in some areas. However, the average rice yield in Africa is only between 10 to 20 q/ha, whereas in Japan farmers produce yields of between 55 to 70 q/ha.

More land in Africa is devoted to the cultivation of corn than to rice and wheat. But the average corn yield in Africa is only about 10 q/ha, which compares poorly with North America where it reaches 60 to 70 q/ha.[3]

Africa is the main exporter of cocoa grain. This represents two thirds of the total world production. During the past 25 years there has been an increase in coffee grain production from 16% of the total world production to 25%. Thanks to the high quality of the coffee and the low cost of labor in Uganda, Ethiopia and Angola, these countries are competitive with the Latin American coffee producers. Egypt and the Republic of South Africa are important exporters of citrus fruits, pine-apples and cocoa.

Animal husbandry is also significant in some African countries, but overall the level of production of meat and milk is very low. Meat production is only 10 to 15 kg per inhabitant in Somalia, which is heavily dependent on animal husbandry. The outstanding country is the Republic of South Africa which contributes half of the meat production of the region.

This overall low level of food production becomes very significant when we look at the demographics of Africa. The population of Africa

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doubled from 220 million in 1950 to 470 million in 1980. During the same period a trend toward actual population decrease was taking place in Europe. Table 1 presents the indices of net reproduction in the world, in Africa and in Europe during the years 1950-1980.[1]

TABLE 1
The indices of net reproduction in the World in Africa and in Europe in the years 1950-1980.[1]

Years	World	Africa	Europe
1950	1.67	1.82	1.14
1960-65	1.80	2.02	1.19
1965-70	1.79	2.10	1.15
1970-75	1.72	2.16	1.04
1975-80	1.55	2.24	0.93

[For comparison, the rate of natural population increase for 1990, as quoted by the Population Reference Bureau, is: World: 1.8, Africa 2.9, and Europe 0.3[8] Ed.]

The African population continues to grow rapidly, and in recent years the rate of increase has reached 2.9%.[8]

The energy value of the average world daily nutrition rate increased from 2316 kcal in 1960 to 2670 kcal in 1985, that is by 15%, although in Africa it increased only 9%. In some areas the decrease was particularly dramatic, thus in Mozambique it decreased from 2007 kcal per person per day in 1960 to 1660 kcal in 1985.

The consumption of animal protein is very low in the majority of African countries, being only 4% of the total amount of protein in Burundi, 7% in Malawi and 52% in Somalia. (The exceptions are those populations that live adjacent to lakes and rivers, whose main occupation is fishing. The calcium level 800 mg/per day/per person was not achieved in any of the African countries with the exception of Somalia.) Yet in these countries the number of live births is such that the population will double in Burundi within 22 years, in Malawi within 20 years, and in Somalia within 23 years.

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The deficiencies of energy, protein, minerals and vitamins are greatest in the countries bordering the Gulf of Guinea, in Ghana and among the inhabitants of the Sahel zone. Nutritional deficiencies have been estimated for the youngest and oldest age groups. Table 2 presents the percentage of children in the age between 1 month and 59 months of life with chronic undernourishment in whom the growth was under 3 standard deviations.[6]

TABLE 2
The percentage of infants (age 1 month to 59 months) with chronic undernourishment in whom the growth was under 3 S.D.[6]

Country	Age in Months				
	0-11	12-23	24-35	36-47	48-54
Egypt	24.8	49.0	41.7	37.5	30.7
Botswana	24.7	55.9	36.8	46.1	40.0
Burkina Faso	24.2	36.6	26.3	26.3	25.8
Kenya/cities	17.9	26.0	34.7	–	34.7
Kenya/villages	27.2	38.7	–	39.3	31.0
Sierra Leone	32.5	35.5	35.1	36.0	31.0
Togo	17.5	34.0	30.9	40.0	37.5
Tunis	24.3	43.7	45.2	47.2	41.2
Zaire	31.0	48.0	46.0	46.8	46.5

The mortality of infants is very high and reaches 100 to 300 per 1000 newborn babies. 35% of these deaths are due to infectious disease.[7] But this does not stop the population of Ghana, for instance, with its unusually high infant mortality rate of 143 per 1000 live births, from doubling every 27 years.

The poverty of the African countries arises from a combination of their very high rates of population increase, their underdeveloped and

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inefficient agricultural methods which result in low productivity and increasing environmental degradation as a result of the two foregoing factors. These await a positive solution.

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THE EVOLUTION OF RACIAL DIFFERENCES IN INTELLIGENCE

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Hominids first evolved in tropical and subtropical latitudes, most probably reaching *sapiens* status in the highlands of East Africa. From this ancestral population some groups migrated north into Eurasia and evolved there into the Caucasoids and Mongoloids. Colonizing temperate and cold environments, they encountered the cognitively demanding problems of survival in cold winters. These problems consisted principally of securing a food supply by hunting large animals and of keeping warm in winter by making fires, clothing and shelters. Survival in these difficult conditions acted as a selection pressure favoring enhanced intelligence and explains why the Caucasoids and the Mongoloids are the races which have evolved the highest intelligence.

In a previous paper the world literature on racial differences in intelligence was reviewed (Lynn, 1991). It was shown that the Caucasoid peoples of North America, Britain, Continental Europe and Australasia obtain mean IQs of around 100. Mongoloid peoples in East Asia and in North America typically obtain mean IQs a little higher in the range of 101-108. They are also characterized by strong visuospatial abilities and weaker verbal abilities. The same pattern is found in the Amerindians, but the level of their intelligence is lower with a mean of about 90.

Negroid peoples are generally considered to have a mean IQ of approximately 85, but this is only true of those in the United States and Britain. African Negroids have a mean IQ in the region of 70. American and British Negroids are more properly considered as Negroid – Caucasoid hybrids, and hybridization has evidently raised their intelligence levels to about midway between the two parent races. The South East Asian races consisting of Micronesians, Melanesians, Polynesians, Maoris and Australian Aborigines typically have mean IQs in the range of 80-90.

These differences in intelligence test performance are corroborated by racial differences in the building of civilization. Only the Mongoloids and the Caucasians have built civilizations and all the discoveries and inventions from early metal working to the contemporary scientific

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advances have been made by these two races. The consistency of the racial differences in intelligence test performance and contributions to civilization suggests that they have a genetic basis, as argued in detail by Jensen (1972, 1973, 1980). This conclusion is reinforced by the results of differences in reaction times between the three major races of Negroids, Caucasoids and Mongoloids. Reaction times provide a measure of the neurological efficiency of the brain in the analysis and processing of simple stimuli, and reaction times show the same progression of ability from Negroids to Caucasoids to Mongoloids as has been shown by intelligence tests. These results confirm the conclusion that the racial differences are neurologically and genetically based. If this is the case, the racial differences must have evolved in accordance with the general principles of natural selection which determine evolutionary development. The purpose of this paper is to present a general theory of the processes through which the racial differences in intelligence have evolved.

1. General Principles of the Evolution of Intelligence

The general principles governing the evolution of intelligence have been established by Jerison (1973). He has shown that from time to time populations have moved into new niches which have entailed increased cognitive demands for survival. When this has occurred the populations have responded by evolving larger brains in relation to body size, i.e. larger "encephalisation quotients". Larger brains have the capacity for greater intelligence and have enabled the populations to deal with the cognitive demands of the new niche.

There have been four major occasions in which the occupation of new niches led to the development of larger brains and, by inference, greater intelligence. The first was the evolution of mammals approximately 220 million years ago. These discovered the nocturnal niche in which they slept during the day and foraged at night and they developed larger brains to deal with the integration of visual, auditory and olfactory information. The second was the evolution of the birds approximately 160 million years ago. In this case the problems of pair bonding and co-operative feeding of the young in nests required the development of greater intelligence and larger brains. The third was the evolution of primates approximately 60 million years ago. They became diurnal, occupied a tree living niche and developed as social animals and to deal with the problems of the new niche they again developed larger brains.

Each of these evolutionary increases in brain size has been accompanied by an increase in intelligence. For instance birds can learn by the process of sensory preconditioning, i.e. they can form an association

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between two neutral stimuli, whereas this cannot be done by reptiles or fish. Only primates can master oddity problems, where the correct choice is the odd object among three, and one trial learning sets, where the correct choice varies from day to day (Razran, 1971). Chimpanzees can achieve "insight", as Kohler (1925) called it, into the use of sticks to retrieve bananas out of reach of the hands, an ability not present in lower mammals.

The fourth major jump in brain size and intelligence led directly to the evolution of *Homo sapiens*. The primates evolved as tree living animals and by around 15 million years ago some of them had developed into several species of apes. Around 12 million years ago this niche started to deteriorate in sub-Saharan Africa as the climate became drier and much of the forest was replaced by brushwood and grasslands. The result was that some of the apes found themselves in open grasslands and this acted as a new niche which required greater intelligence for survival. By about 5 million years ago they evolved into the Australopithecines with upright posture and a greater encephalisation quotient.

During the last two or more million years hominids evolved through stages equivalent to the Australopithecines, *Homo habilis*, *Homo erectus* and finally into *Homo sapiens*. During this evolution the size of the brain increased from approximately 500 cc to 1400 cc. The selection pressures for this increase in brain size were probably that these evolving hominids occupied a new niche as tool makers and users and as highly co-operative social animals (Alexander, 1989).

About one million years ago *Homo erectus* populations or their equivalents were present in Africa, Europe and Asia and during the last million years one or more of these populations evolved into *Homo sapiens*. There are two theories of the final stage of hominid evolution from *Homo erectus* to *Homo sapiens*. These are the multi-regional and the single origin theories. The multi-regional theory states that the *Homo erectus* populations in Africa and Eurasia evolved in parallel into *Homo sapiens* over the course of approximately the last half million years (Wolpoff, 1989). The single origin theory states that the evolution from *Homo erectus* to *Homo sapiens* probably took place in the highlands of East Africa, and that some *Homo sapiens* populations then migrated into Eurasia and replaced the *Homo erectus* and Neanderthal peoples (Stringer and Andrews, 1988). According to this theory *Homo sapiens* populations were established in southwest Asia, in the region of present day Israel and Lebanon, by about 92,000 years ago and from there further groups migrated throughout the world. By 60-40,000 years ago they were established in northeast Asia (Jorde, 1985), and by 40-30,000 years ago they were in Europe and Australasia (Mellars

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and Stringer, 1989), evolving and adapting all the time.

The dispute between the two theories is not yet resolved. In Europe there seems little doubt that *Homo erectus* evolved into the Neanderthals and that these were replaced by fully modern peoples (*Homo sapiens sapiens*) around 40-35,000 years ago (Mellars, 1989) in accordance with the single origin theory. But in east Asia there is more evidence for continuity. Some Mongoloid morphological features such as the Inca skull bone were present in *Homo erectus* populations in China about half a million years ago (Liu, 1985) and intermediate forms have been found in east Asia, suggesting a gradual transition from *Homo erectus* to *Homo sapiens* (Pope, 1988). The multi-regional theory is certainly still tenable for evolution in the far east.

For our present purposes it is not crucial which of these two theories is correct. The central thesis of our argument is that either through a multi-regional or single origin process the *Homo sapiens* peoples in Eurasia had to adapt to the problems of survival in cold temperate and sub-arctic environments, while those in Africa evolved in tropical, sub-tropical or warm temperate environments. The thesis to be advanced is that the Caucasoid and Mongoloid peoples who evolved in Eurasia came to occupy a new niche which exerted selection pressure for improved intelligence to deal with the problems of survival in the cold northern latitudes. The thesis is an application to the problem of racial differences in intelligence in man of Jerison's principle that the cognitive demands of a new niche have been the selection pressure for increases in intelligence throughout evolutionary history.

2. Tropical and Subtropical Hominids as Plant Eaters

Primates evolved rapidly following the extinction of the dinosaurs. They lived on plant foods and those which evolved into monkeys and apes remained largely plant eaters, supplemented to some extent with insects. A few primates, most notably baboons and chimpanzees, sometimes kill small mammals for food, but meat has never become more than a small part of their diet (Strum, 1981).

The Australopithecines continued to live largely on plant foods. This can be determined from the wear of their teeth which shows that they subsisted largely on a diet of leaves and fruits (Grine and Kay, 1988). Probably they also ate tubers, nuts, grass seeds and insects (Isaac, 1978; Parker and Gibson, 1979). As the Australopithecines were replaced by *Homo erectus,* and those of the latter that lived in tropical and subtropical Africa appear to have continued to primarily as plant eaters (Stahl, 1989). There was no compelling reason for them to switch their diet to meat.

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Temperatures in Sub-Saharan Africa vary between 20-25°C with little seasonal variation throughout the year except for the extreme south where the climate is warm temperate. As many as 129 plant foods are available throughout the year (Peters, O'Brien and Box, 1984) consisting of berries, fruits, bulbs and tubers during the wet season and shoots and leaves during the dry season, and insects such as ants and termites are also available (Stahl, 1984). The belief that early African hominids hunted medium-sized and large herbivores has been called into question in recent anthropological writings by Binford (1985), who has shown that the accumulations of bones of large herbivores at hominid sites bear carnivore teeth marks on which stone cut marks made by hominids are superimposed. This suggests that the large animals were hunted and killed principally by lions and leopards and that early hominids scavenged the bones, which they broke up to extract the marrow. Blumenschine (1989) also argues that early African hominids were scavengers rather than hunters. The lions and leopards were unable to extract the brains from the cranium or marrow from large bones, and it is these parts which are found predominantly at hominid sites, suggesting scavenging of those parts which lions and leopards were unable to get at.

The conclusion that people in tropical and subtropical latitudes were never greatly reliant for their food supply on the hunting of animals for meat is supported by observations on contemporary hunter gatherers. Many non-cultivating populations living in tropical and subtropical environments subsist largely on plant foods of which numerous species are available throughout the year (Lee, 1968; Tooby and de Vore, 1987). Contemporary Pygmies and Bushmen eat from 60 to 110 plant foods and these constitute around 70-85 per cent of their diet (Stahl, 1984). Australian Aborigines in the western desert obtain 70-80 per cent of their food from plants and most of the remainder from eggs and insects. They have no well developed group hunting techniques (Gould, 1969). The Gadio people in New Guinea obtain 96 per cent of their food from plants and only 4 per cent from meat (Dornstreich, 1973). The ready availability of plant foods throughout the year, together with insects and eggs, meant that people in tropical and subtropical Africa never had to rely on meat for their food supply and did not come under strong selection pressure to develop the cognitive skills required to hunt large animals.

The life style of present day !Kung bushmen in the Kalahari desert provides a useful insight into the relative ease of securing food supplies for hunter gatherer peoples in tropical latitudes. As described by Lee (1968), women go gathering plant foods about one day in three, and men go on hunting expeditions for about one week in three. This is sufficient

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to provide food for the whole group, including infants, children and the old. The rest of the time can be spent relaxing about the camp. For these peoples the problems of obtaining food supplies are neither time consuming nor cognitively demanding.

3. Cold Climates as a Selection Pressure for Increased Intelligence

The primates evolved in tropical and subtropical climates. They have never been able to cope with temperate environments because, being plant eaters, they can find nothing to eat during the winter and spring when plant foods are unavailable. They find cold temperatures a problem, and cold periods in global fluctuations of world temperature have put them under selection pressure for increased intelligence in order to survive. One of these occurred about 54-52 million years ago during the mid-Eocene, when the primates showed an accelerated increase of brain size, followed by a period of slower growth after the return of warmer conditions (Pickford, 1988). It can be inferred that during this period the global cooling exerted selection pressure on primates for an increase in intelligence.

The mid-Miocene, approximately 16 million years ago, was a warm period and two species of hominoids (Pliopithecus and Dryopithecus) migrated into Eurasia. They survived until the cooling which took place at the end of the Miocene, about 14 million years ago, and then they went extinct, except in tropical south east Asia where they evolved into the Orangutans (Pickford, 1986). These hominoids could survive in tropical and subtropical climates but they were evidently not sufficiently intelligent to survive in the more demanding temperate and cold environments of Eurasia.

The only hominid species to overcome the problems of survival in the cold temperate climates of Eurasia were *Homo erectus* and *Homo sapiens*. The problems of overwintering would have been considerable even during warm periods such as the present, but during the periodic glaciations these problems would have been much more formidable. Most of the last 80,000 years has been colder than today. During the main Würm glaciation of approximately 24-10,000 years ago winter temperatures in Europe and north east Asia fell by 5-15°C. The terrain became cold grasslands and tundra with only a few trees in sheltered river valleys and the environment was broadly similar to that of present day Alaska (Nilsson, 1983). Survival in these conditions would have called for greater intelligence than was required in the tropical and sub-tropical climates of sub-Saharan Africa.

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4. Cognitive demands in Northern latitudes

The problems of survival in the northern latitudes of Eurasia would have resided in the cold winters and consisted principally of obtaining food and keeping warm. Unlike the tropics and subtropics, plant foods were seasonal and not available for many months during the winter and spring. People therefore became wholly reliant on hunting large herbivores such as mammoth, horse and reindeer to secure their food supply.

It was shown by Lee (1968) that among contemporary hunter gatherers the proportions of foods obtained by hunting and by gathering varies according to latitude. Peoples in tropical and sub tropical latitudes are largely gatherers, while peoples in temperate environments rely more on hunting. Peoples in arctic and subarctic environments rely almost exclusively on hunting, together with fishing, and do so of necessity because plant foods are unavailable except for berries in the summer and autumn.

The effective hunting of large herbivores would have presented cognitive problems. Large herbivores can run fast and are virtually impossible to catch simply by chasing after them. It is particularly difficult to hunt them in open grasslands such as were present in Northern Eurasia, where there is good visibility for several thousand yards and the herbivores have ample warning of approaching predators. Hunting in open grasslands is more difficult than hunting in the woodlands of the tropics and sub tropics where there is plenty of cover for hunters to hide in. The only way of hunting animals in open grasslands was to make use of natural traps into which the animals could be driven. One of the commonest traps was the narrow ravine where some of the beasts would stumble and could be speared by members of the group waiting in ambush. In addition, the herbivores could be surrounded and driven over cliffs, into bogs or into the loops of rivers (Geist, 1978; Mellars, 1989).

For effective hunting of large herbivores people would have needed to manufacture a variety of tools from stone, wood and bone for making spearheads and for cutting. When these peoples had killed a large herbivore they would have had to skin and butcher it into pieces of a size that could be carried back to the base camp. For this it was necessary to manufacture a variety of sophisticated cutting and skinning tools.

The second principal set of problems encountered in the northern latitudes would have centered round keeping warm. People had to solve the problems of making fires, clothes and shelters. Fire was used by hominids at a *Homo erectus* level of evolution in sub-Saharan Africa as early as 1.4 million years ago and in China and Europe about half a million years ago (Goudsblom, 1986), but it must have been much easier to

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acquire fire in Africa than in Eurasia. In Africa there would have been spontaneous bush fires from which hominids could take ignited branches, carry them back to camp and get a domestic fire started. In the colder parts of Eurasia during the glaciations there would have been no spontaneous bush fires. People would have had to make fires by friction or percussion in a terrain where there was little wood. Probably dry grass had to be stored in caves for use as tinder and the main fuel would have been dung, animal fat and bones. The problems of starting fires and keeping them burning would have been considerably more difficult in Eurasia than in Africa. In addition clothing and shelters were unnecessary in sub-Saharan Africa but were made in Europe during the main Würm glaciation. Needles were manufactured from bone for sewing together animal skins and shelters were constructed from large bones and skins (Geist, 1978; Mellars, 1989).

The problems of hunting, butchering and skinning large herbivores and of making clothing would have required the construction of a greater variety and sophistication of tools than were needed in tropical and subtropical environments. This has been confirmed by Torrence (1983) who has demonstrated an association between latitude and the number and complexity of tools used by contemporary hunter gatherers. He found that peoples in tropical and subtropical latitudes have between 10 and 20 different tools, whereas those in the northern latitudes have between 25 and 60. Furthermore, northern peoples made more complex tools involving the assembly of components, such as hafting a sharp piece of bone onto the end of a spear and fixing a stone axe head onto a timber shaft.

The manufacture of sophisticated tools and making fires, clothing and shelters would have been cognitively demanding. Those groups which could not succeed would have died out, leaving those with alleles for higher intelligence as the survivors. Through this process the Caucasoid and Mongoloid peoples of Eurasia would have evolved higher average intelligence levels than the Negroids exposed to a less cognitively demanding environment in sub-Saharan Africa.

5. Enhancement of General, Verbal and Visuospatial intelligence in Caucasoids and Mongoloids

Survival in the cold winters of Eurasia would surely have required an increase in all the three major components of intelligence, namely general, verbal and visuospatial ability. General intelligence, the general ability present in all cognitive tasks, would have been needed to deal with all the new problems encountered in the cold northern environments such as

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building shelters and fires, making clothes and manufacturing more efficient tools for killing, butchering and skinning large animals. Improved verbal abilities would have been needed for better communication in discussions of how to solve these problems, for planning future activities and for transmitting cultural knowledge and skills to children. Improved visuospatial abilities would have been needed for planning and executing group hunting strategies, for accurate aiming of spears and missiles and for the manufacture of more sophisticated tools and weapons from stone, bone and wood. Fathers would have shown sons how to chip flints to produce good cutting tools, make spears with sharp points and so forth, and these skills would have been conveyed largely by watching and imitation, much as craft skills are learned today by apprentices watching skilled craftsmen, rather than by verbal explanations. Hunting and tool making would have been undertaken principally by males and this would be why it has virtually always been found that the visuospatial abilities are stronger in males than in females (Lynn and Petersen, 1986).

We saw in the data set out in the previous paper that general, verbal and visuospatial abilities are all higher in the Caucasoid peoples as compared with Negroids. The magnitude of the Caucasoid advantage is about the same for all three abilities, namely about 30 IQ points for the Negroid-Caucasoid comparison and about 15 IQ points for the difference between Caucasoids and Negroid-Caucasoid hybrids in the United States and Britain. It is true that Jensen and his co-workers have found that the differences are slightly less for the verbal abilities than for general intelligence and the visuospatial, but this differential is quite subtle. The broad pattern is for a 30 IQ point rise in all three abilities, suggesting that all three abilities came under selection pressure for enhancement to about the same extent.

It is apparent that the intelligence of the Mongoloids evolved somewhat differently. The Mongoloid peoples have slightly higher general intelligence than the Caucasoids, markedly higher visuospatial abilities and somewhat weaker verbal abilities, and we must now consider how this pattern of abilities could have evolved. The reason that Mongoloids have more highly developed general intelligence than Caucasoids can be attributed to the colder winters they experienced and hence the stronger selection pressure for increased intelligence. Mid-winter temperatures in north east Asia are colder than in Europe, particularly inland in the area around Lake Baikal where the classical Mongoloids evolved. In the main Würm glaciation the temperatures were some 5-15°C colder than today (Nilsson, 1983). These cold periods were particularly severe for the Mongoloids because the Himalayas iced up and acted as a southern

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barrier, so that the Mongoloids were trapped in a cold pocket between the Himalayas on the south and the arctic Chersky mountains on the north. It was in response to this severe cold that the Mongoloids evolved their distinctive morphological cold adaptations to reduce heat loss, such as the shortening of the limbs, the flattening of the nose into the face, the thick black hair, the reduction of the beard in males because moist exhaled air in very low temperatures freezes on the beard and then freezes the face; and the epicanthic fold, a thickening and extension of the eyelid near the nose which serves to reduce reflected glare from snow and ice (Coon, 1962; Krantz, 1980). These morphological adaptions are most pronounced among the classical Mongoloids, particularly the Buriats and the Tungus who lived in the coldest region of inland eastern Eurasia. They are less pronounced among the southern Chinese and among the Ainu, the original inhabitants of Japan for whom the climate was more maritime and therefore less severe.

If the selection pressures for enhanced intelligence acted on the Mongoloids uniformly for general intelligence, verbal and visuospatial abilities, as it apparently did for the Caucasoids, then all three abilities should be elevated in the Mongoloids above those of Caucasoids. Yet the evidence shows that this is not the case and that the Mongoloids have evolved a different pattern of abilities consisting of strong visuospatial and weak verbal ability. The most probable explanation for the evolution of this pattern is that one or more mutations for it occurred in the Mongoloids which did not occur in the Caucasoids.

A possible hypothesis is that mutations occurred in Mongoloids which shifted the balance of the verbal and visuospatial abilities in favor of the visuospatial. The hypothesis posits that there is a negative association between the verbal and visuospatial abilities which arises because the more cerebral cortex is devoted to one the less is available for the other. This implies that it should be possible to demonstrate that the verbal and visuospatial abilities are negatively correlated. It has been shown that, when general intelligence is controlled for, this is the case (Lynn, 1987). Vernon (1990) has produced further evidence in favor of the hypothesis although he considers that the negative correlations arise from a statistical artefact. In my own opinion this is incorrect and the negative relationship is a genuine one (Lynn, 1990a).

If this hypothesis is correct, the mutants for the enhancement of the visuospatial abilities at the expense of the verbal would have spread in the Mongoloids because they conferred a survival advantage. This in turn must mean that although increased verbal and visuospatial abilities were both advantageous for survival in the cold environments of Eurasia, the

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visuospatial abilities must have been that bit more important. It is not difficult to understand why this would have been so. It would have been because of the crucial role of strong visuospatial abilities for making sophisticated tools and weapons and for the planning and execution of group hunting strategies. Good verbal abilities were not quite so important and were worth sacrificing for a gain in the crucial visuospatial abilities.

6. Evolution of Intelligence in South East Asians and Indians

The south east Asian races evolved either from *Homo erectus* populations which were present in this region about 1 million years ago (Jones, 1989) or alternatively, according to the single origin theory, by migration of *Homo sapiens* populations across India, into south east Asia, through the Indonesian archipelago and thence into Australia and the Pacific Islands. Whichever of these two theories is correct, these peoples would have spent some time in temperate Asian environments before they migrated eastward. This would have exerted some selection pressure for enhanced intelligence, but the duration of their exposure to cold winters would have been relatively short as compared with the experience of the Caucasoids and Mongoloids. By the time the main Würm glaciation came on, about 24,000 years ago, these peoples were settled in the tropical Pacific Islands and in Australia. Hence their intelligence levels were raised a little above those of the Negroids but not to the high level of the Caucasoids and Mongoloids.

The Indian Caucasoids had a longer period of exposure to the cold winters of northern India, which were significantly colder during the main Würm glaciation than they are today. This explains why Indians invariably obtain higher intelligence levels than Negroids, whether they are in India or South Africa, where their mean IQs are around 85 or in Britain where their mean IQs are around 95, as shown in our review.

7. The Amerindians

It is well known that the Amerindians originated from peoples who crossed the Bering Straits and made their way southward into the Americas. Amerindian artifacts have been dated at 30,000 years ago in California (Bada, Schroeder and Carter, 1974), at 32,000 years ago in north east Brazil (Guidon and Delibrias, 1986) and at 33,000 years ago at Monte Verde in Chile (Dillehay and Collins, 1988). It must have taken several thousand years for these peoples to have found their way from Alaska to south America. The Bering land bridge was open a number of times during successive glaciations between approximately 80 - 25,000 years ago, and some consider it possible that the first American peoples

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made the crossing on foot sometime during this period, perhaps as early as 42 - 36,000 years ago, allowing 3,000 years or so for some of them to make their way down to south America.

If this chronology is correct, there must have been an archaic Mongoloid people in north east Asia around 60 - 50,000 years ago. Some of these must have migrated north east into Kamchatka and the Chersky Peninsula to make the crossing of the Bering straits by around 42 - 36,000 years ago. Other archaic Mongoloid peoples remained in north east Asia. The common origin of these two races is known from a number of genetic similarities such as blood groups. For instance, the Rhesus negative allele is rare and the Diego blood group unique to these two races and they both have similar coarse and straight black hair, shovel incisor teeth and the Inca bone (Krantz, 1980).

The studies reviewed previously showed that the profile of intelligence of the Amerindians is similar to that of the Mongoloids in so far as they have strong visuospatial and weak verbal abilities. The whole profile is lower than that of Mongoloids by around 1 standard deviation, so that their general intelligence stands at around 90 as compared with a Mongoloid mean of around 105. It appears as if some factor set the cognitive profile of strong visuospatial – weak verbal abilities in archaic Mongoloids, and that some subsequent selection pressure raised the whole profile in the Mongoloids, leaving that of the Amerindians at a lower level. The most probable explanation is that the distinctive profile became established among archaic Mongoloids during the first Wurm glaciation sometime in the period 60 - 40,000 years ago, or possibly in earlier glaciations over the course of half a million years if the multi-origin theory is correct. The reason that this cognitive profile became established was the paramount selective advantage of strong visuospatial abilities for survival in a severe periglacial environment.

The main Würm glaciation of approximately 24 - 10,000 years ago must have been the factor raising the cognitive abilities of the Mongoloids and leaving that of the Amerindians at a lower level. The Amerindians escaped exposure to the severe cold of the main Würm glaciation. Once they had crossed the Bering Straits and made their way down into the Americas they would have found life a good deal easier than their ancestors had been accustomed to in north east Asia. They would have found a number of herbivorous mammals such as mammoth, horse, antelope, sloth, armadillo and bison who were quite unused to being hunted by man. Normally predators and prey evolve together in that over the generations predators become more skilled at catching prey and prey become more skilled at evading predators. Through this process an

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equilibrium is maintained and both predators and prey are fully taxed to survive. But the herbivorous animals of the Americas had no experience of predation by man and would have been easy game for the skilled hunters who had evolved for many thousands of years in the more difficult environment of north east Asia. So they would have found large numbers of inexperienced herbivores who were easy to catch and, in addition, as they moved southward they would have found that plant foods were more readily available. They ceased to rely exclusively on hunting for their food and adopted the easier life style of the hunter gatherer in which plant foods played a significant part in their diets (MacNeish, 1976; Hayden, 1981).

Thus in the new environment of the Americas survival would have been much easier. The Amerindians would have retained their elevated level of general intelligence, as compared with the Negroids, which their ancestors would have gained in north east Asia during the early Würm glaciations. They would also have retained their well developed visuospatial abilities. These enabled them to continue as effective hunters and there would have been no selection pressure to evolve any different pattern of abilities. However, the selection pressure for any further increase in these and other cognitive abilities would have been considerably relaxed. The cognitive abilities of the Amerindians have probably increased since they reached the Americas because intelligence has been a fitness characteristic for all human populations. But the rate of increase will have been relatively slow because of the relaxation of the selection pressures for enhanced intelligence acting on them. The history and the intelligence of the Amerindians suggests that the main Würm glaciation must have been the principal factor which raised the intelligence of the Caucasoid and Mongoloid peoples to its present level.

This conclusion enables us to answer a conundrum which has long perplexed anthropologists. The problem is this: the first *Homo sapiens* are currently thought by many theorists to have appeared in Africa around a quarter of a million years ago and to have been established in the Near East by 92,000 years ago. The species lived in small hunter gatherer bands until about 10,000 years ago, when some groups in the Middle East and Anatolia made the Neolithic transition to horticulture and eventually agriculture. This involved a transition to larger settled communities which planted food crops and kept domestic animals. This change of life style permitted larger concentrations of populations in towns and city states and allowed people to develop specialized skills. In particular, it became possible to support a small intelligentsia which was able to produce the early intellectual and technological advances such as the construction of

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a written language, a system of arithmetic, the understanding of the regularities of the movements of the planets and so on.

This Neolithic revolution occurred in the Near East about 10,000 years ago, in northern China about 7,000 years ago and in Central America about 5,000 years ago. The problem which has puzzled anthropologists is why these advances should have occurred, presumably independently, in these three locations at about the same time. Why did they not occur two hundred thousand years ago in Africa, or sometime in the period 90,000-10,000 years ago in Eurasia? There were warm interglacial interludes during this period when people could in principle have made the transition to agricultural societies. But they didn't.

Different anthropologists have offered a variety of theories to explain this problem. The principal theories are population growth, increasing social complexity and climatic change. But none of these provides a satisfactory explanation for why the agricultural revolution did not occur at some earlier period during the last 200,000 years but had to await the end of the last Ice Age.

The answer proposed to this problem is that people were not sufficiently intelligent to pioneer these developments until they had been through the major selection pressure of the last Würm glaciation. This also explains why these advances were never made by the Negroids or the south east Asian races who escaped the rigors of the last glaciation. The Amerindians were in an intermediate position, exposed to some selection pressure for enhanced intelligence from cold, but not subjected to the full severity of the subarctic winters to which the Caucasoid and Mongoloid peoples were exposed.

8. Racial Differences in Brain Size

Throughout the course the evolution new species have from time to time evolved with larger brains or, more strictly, higher encephalisation quotients, to accommodate greater intelligence. These increases in brain size have occurred to deal with the problems of survival in new cognitively demanding riches. It has been argued that one of these occasions took place when hominids migrated from tropical and subtropical Africa into the temperate and cold environments of Eurasia. These migrants, who evolved into the Caucasoid and Mongoloid peoples, have invariably been found to have higher average intelligence levels than populations descended from those who remained in tropical and subtropical latitudes. The question to which we turn now is whether the Caucasoids and Mongoloids evolved larger brains to accommodate their greater intelligence, as had happened on previous occasions in the history of evolution.

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In the last century and the early decades of the present century there were a number of claims that Caucasoids had larger average brain sizes than Negroids but in recent years it has come to be widely claimed that these studies have been discredited (Gould, 1981). Nevertheless, the figures given by Gould for brain size for the major races indicate that Mongoloid and Caucasoid brain sizes are larger than those of Amerindians, and these in turn are larger than those of Negroids. Gould's calculations are shown in Table 1. Data on racial differences in brain size have also been collated by Rushton (1989) whose results are given in Table 1. Finally, Beals, Smith and Dodd (1984) collected results from approximately 20,000 crania and classified them into geographical and climatic zones. They found the largest brain size in Mongoloids, followed in descending order by Caucasoids, Amerindians, south east Asians and Negroids. These results are also given in Table 1. Gould's cranial capacity estimates are given in cubic inches, while those of Beals et al and Rushton are given in cubic centimeters. The reason for Rushton's estimates being higher than those of Beals et al is that the latter made a 6 per cent reduction because the cranial capacities were estimated by filling the crania with shot, whereas Rushton has not made the adjustment. If this is allowed for, the two sets of readings are closely similar and are similar also to those given by Gould.

The Evolution of Racial Difference in Intelligence

Region	Climate	Race	Beals et al	Rushton	Gould
Asia	Temperate – cold	Mongoloid	1415 (51)	1448	87
Europe	Temperate – cold	Caucasoid	1362 (35)	1408	87
American	Hot	Amerindian	1345 (58)	–	86
South W Africa	Hot	Negroids	1268 (85)	1334	83

TABLE 1: Racial Differences in brain size in cubic centimeters (Beals et al and Rushton) and cubic inches (Gould). Standard deviations given in brackets.

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A further large scale study which confirms that Caucasoids have larger average brain size than Negroids has been carried out by Broman, Nichols, Shaughnessy and Kennedy (1987). They have examined and followed up approximately 17,000 Caucasoid and 19,000 Negroid children from conception to the age of 7 years in the United States. At the age 7 there was the usual gap of approximately 15 IQ points between the two groups. The head circumferences of the two groups have been calculated from the published data and are 50.9 (sd 1.6) for Negroids and 51.7 (sd 1.6) for Caucasoids. This difference is statistically highly significant and provides an approximate measure of differences in brain size, since head circumference and brain size are correlated at about 0.8 (Brandt, 1978).

The Negroid children were slightly taller than the Caucasoid, suggesting that possible differences in nutrition are not likely to be responsible for the differences in head size. The magnitude of the difference, amounting to approximately half a standard deviation, is rather less than the difference of approaching two standard deviations in the Beals et al data. This may be partly because American Negroids are hybrids and partly because Negroids mature more quickly than Caucasoids (Rushton, 1988, 1989).

Examining the data set out in Table 1 as a whole, it is evident that the disparity in brain size between Mongoloids and Caucasoids is about half the disparity between Caucasoids and Negroids (40 cc as compared with 74 cc in the Rushton's data and 53 cc as against 14 cc in the Beals et al data). This broadly parallels the intelligence test results where the Mongoloid – Caucasoid disparity is typically around one quarter to one half a standard deviation, whereas the Caucasoid – Negroid disparity is approximately two standard deviations.

Considered in terms of standard deviation units, the Negroid-Caucasoid disparities in brain size and in mean IQs are approximately the same, i.e. about 2 sds. The Mongoloid-Caucasoid disparity is slightly greater in brain size than in mean IQs.

The data on racial differences in brain size show a striking similarity to the differences in intelligence. The races fall into the same rank order with Mongoloids highest on both brain size and intelligence, followed in descending order by Caucasoids, Amerindians, south east Asians and Negroids.

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TABLE 2
Summary of Studies on Head Size and Intelligence

Reference	Sample	Correlation
Pearson	4,500 British school children	r – .11
Pearson (1906)	1,000 British university students	r – .10
Pearl (1906)	935 Bavarian soldiers	r – .14
Murdock & Sullivan (1923)	600 American children	r – .14
Reed & Mulligan (1923)	449 University students	r – .08
Sommerville (1924)	105 University students	r – .10
Schreider (1968)	326 French farmers	r – .23
Susanne & Sporoq (1973)	2,071 Belgian conscripts	r – .13
Weinberg et al (1974)	334 American boys	r – 35
Broman et al (1975)	26,760 American children	r – .14
Passingham (1979)	415 British adults	r – .14
Henneberg et al (1985)	302 Polish students	r – .14
Lynn (1990b)	310 Irish school children	r. – 18
Bogaert & Rushton (1989)	216 Canadian university students	r – .18
Rushton (1990)	284 Canadian university students	r – .20
Willerman (1989)	40 American university students	r – .35

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9. Brain Size and Intelligence in Man

Although brain size relative to body size correlates with intelligence across species, there has been a marked reluctance among anthropologists to admit that brain size is related to intelligence in man.

For instance, Beals, Smith and Dodd (1984) in their paper citing racial differences in brain size in man write of the association between brain size and intelligence that "no convincing case for such associations has ever been presented". Similarly "there is even more evidence accumulating against a direct relationship between cranial capacity and intellectual capacity" (Henneberg, 1984); and "there is really no evidence to show that brain size is positively correlated with intelligence" (Latham, 1974).

In spite of these assertions, there is in fact quite solid evidence for a positive association between brain size and intelligence in *Homo sapiens*. A search of the literature has turned up 16 studies on the question. In most of these, head circumference has been taken as an approximate measure of brain size. The results are tabulated in Table 2. It will be seen that the studies obtained a positive correlation between head size and intelligence and in all cases the correlations are statistically significant. The correlations are certainly quite low, but this could be partly because head circumference is not a perfect measure of brain size and intelligence tests are not perfect measures of intelligence. It is possible to correct the correlations for these unreliabilities. The effect of this, assuming that head circumference correlates 0.8 with brain size (Brandt, 1978) and that intelligence tests have a reliability of 0.9, is to increase the correlations by around 20 per cent. However, perhaps the most interesting study is that by Willerman, Shultz, Rutledge and Bigler (1989) in which brain volume was measured by magnetic resonance scanning in 40 university students and a correlation of 0.35 obtained between brain volume and intelligence. This result, together with the consistent trend in the studies summarized in Table 2, puts it beyond dispute that brain size and intelligence are positively correlated in man.

10. Conclusion

The argument is now complete. Brain size is positively correlated with intelligence in man, and the races show consistent differences in both brain size and intelligence. These differences appear to have arisen because the Caucasoids and the Mongoloids colonized a new and cognitively demanding niche when they migrated into the temperate and cold environments of Europe and Asia. In these harsh environments the less intelligent failed to survive, and this left the Caucasoids and the Mongoloids as the two most intelligent races and the only two races that

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have made any significant contribution to the development of civilization. The evolution of racial differences in intelligence in man has followed the same principle that has operated throughout evolutionary history, namely adaptation to a new and cognitively demanding niche.

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RACE AND INTELLIGENCE AN ALTERNATIVE HYPOTHESIS

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In principle I find Lynn's arguments very convincing, although the evidence is inevitably circumstantial and does not admit of conclusive experimental proof. Most of the alternative non-genetic arguments have been shown to be incapable of accounting for the observed differences, but of course there may be other alternatives not yet seriously considered. If I suggest one such argument it is more in the hope that it may lead to well-controlled empirical studies than that it will persuade readers in its present form, even though there is good evidence to support the major premise.

Lynn himself mentions malnutrition as a possible cause of IQ differences, only to dismiss it rather casually; this is odd in view of the use he has made of the argument himself in another connection (Lynn, 1990). He dismisses malnutrition on the basis that there are few differences in height between blacks and Caucasoids, but this makes the unwarranted assumption that malnutrition can be simply defined in terms of insufficiency of calories. The well-known Dutch famine experiment (Stein et al., 1972) is subject to the same criticism. There is considerable evidence that even apparently well-fed, middle class whites may suffer from specific vitamin and mineral deficiencies, that these may lower IQ score significantly, and that dietary supplementation may increase IQ markedly. Earlier studies from Harrell, Woodyard and Cates (1955), or more recently Benton and Roberts (1988) and Schoenthaler (1991) have reported along these lines, and a recent large-scale study by the Dietary Research Foundation, well-controlled and analyzed, has shown that responders to the supplementation, as compared with controls, showed an average increase in IQ of 11 points! This, and several relevant studies, has been published recently as a separate issue of Personality and Individual Differences (Eysenck & Eysenck, 1991).

If we assume that blacks in the US and in the UK have a less well-balanced diet than whites, and that African blacks have an even worse diet, then much or even all of the observed IQ difference may be due to

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nutritional deficiencies. The same cause may be responsible for the differences in IQ between blacks in the North and in the South observed after the First World War. The difference between hunters (Caucasoid) and fruit-gatherers (Negroid) in pre-historical times may also be relevant in providing the former with a more balanced diet. I do not want to extend the discussion unduly in suggesting further ways in which such a theory might account for many of the findings on which Lynn bases his argument; this is hardly the place for such a presentation.

Nevertheless, it may be useful to point to ways of testing some of the consequences which would seem to follow from my hypothesis. It would seem that Negroid children should benefit significantly more from dietary supplementation than Caucasoid, and Caucasoid slightly more than Mongoloid. Equally, determination of vitamin and mineral deficiencies should find these more plentiful in Negroid than in Caucasoid, and in Caucasoid than in Mongoloid children. African blacks should come out worst, and benefit most. These suggestions are easily testable and findings should be of obvious social and scientific importance. Whether the final results would suggest that nutritional deficiencies of this kind account wholly or only in part (if at all) for existing differences in IQ between races is impossible to predict; only empirical evidence will enable us to assess the value of this alternative theory.

Lynn might argue that dietary imbalance is merely a consequence rather than a cause of IQ differences. This is a complex issue, particularly as vitamin and mineral deficiencies have also been shown to be largely responsible for anti-social and aggressive behavior (Schoenthaler, 1991). Given that slavery was probably accompanied by an unbalanced diet, the combination of low IQ and anti-social behavior would have been set which is so characteristic of the (largely black) underclass in modern USA. The major question is the extent to which this trend can be reversed. If it can be reversed completely, then clearly the argument for a *genetic* explanation is weakened. The most likely outcome, of course, will be a partial elimination of the differential, particularly if we remember that a large proportion of Caucasoid children (and not only deprived children) will benefit from supplementation. Clearly much new evidence is urgently required before the last word can be said on this whole issue.

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CLIMATE AND INTELLIGENCE

Edward M. Miller
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Lynn is not the first to argue that the benefits of intelligence were greatest for those populations living in cold climates during the Ice Ages (for an early exposition see Huntington 1924, Chapter IV).[1] It is common to argue that the impetus for the enlargement of the brain size "during the era of *Homo erectus* was due to an expansion out of the tropics and into cool regions where ingenuity and flexibility of behavior were more necessary for survival" (Campbell 1976, p. 324). More recently, Calvin (1991) has argued that human intelligence was strongly selected for in cold areas during the Ice Ages, although without recognizing that this hypothesis had implications for the geographical distribution of intelligence. If conditions in the colder regions were such that there was strong selection for intelligence as to lead to the emergence of a new species (*Homo sapiens*), it is plausible that this selection for intelligence would also have led to a cline for intelligence in which intelligence increased as one moved toward the frigid regions.[2]

Physical anthropologists (Coon 1965, 1982, Krantz 1980) have examined the distribution of many traits and found that clines existed in which they varied with either climate (body size and shape, nose shape, hair type) or latitude (skin color). The characteristics for which clines in skin color and other external characteristics are argued to exist are the characteristics traditionally used to delimit one race from another. Thus the existence of a cline for intelligence such that intelligence increased with winter temperature would explain the racial variations in intelligence.

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[1] This slightly simplifies Huntington's theory since he felt the extreme cold of the Arctic regions or Siberia was not conducive to mental development and he attached high weight to the selection that occurred as populations migrated into the areas vacated by the retreating glaciers.

[2] Although in the current paper Lynn argues that Caucasians have roughly the same intelligence regardless of where they live, in an earlier (Lynn 1978), he reported that the Caucasoid people inhabiting the southerly latitudes from Spain through the Middle East to India scored lower than those with origin in Northwest Europe, evidence that clines in intelligence roughly parallel those in climate.

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These cold climate adapted races are the modern day Caucasians and Mongoloids, with the Mongoloids usually considered to be the more cold adapted. This is another way of reaching Lynn's conclusion that adaption to different climate requirements explains differences between races in intelligence.

There is a general principle here. A theory to explain human intelligence growth will normally imply that some populations were subject to greater selection than other populations. Thus the theory will have testable implications for the differences in intelligence between populations. One way to test theories of the emergence of intelligence (or other characteristics for that matter) is to see if their implications for the distribution of intelligence among existing populations corresponds with observation.

Lynn discusses the intellectual demands of large animal hunting and keeping warm in the cold as needs that led to intelligence being selected for. There are two more climate related variations in hunter-gather strategies that may have contributed to the growth in intelligence, the need to store food, and the abandonment of migratory way of life.

Binford (1980) has documented two empirical regularities in the behavior of hunter-gatherers which may be of evolutionary significance. One is that there is a systematic relationship between the extent to which societies store food and the effective temperatures where they live. Those in colder climates do more food storage, presumably due to the problem of "over-wintering," in colder climates. He reports that food storage is practiced only (with exceptions) in societies whose growing seasons are less than about 200 days.

Although Binford didn't deal with the intelligence required for the different strategies, the intellectual requirements of strategies do appear to differ. High intelligence has a greater benefit in climates where food storage is useful. First of all, intelligence increases the likelihood that the required storage techniques, such as drying, will be discovered. Secondly, successful use of storage involves looking ahead to the period of shortage, and postponing some consumption in order to store the food. Success with a food storage strategy requires ability to delay the gratification of eating available food. The ability to delay gratification appears to increase with intelligence. In experiments where children were forced to choose between a small candy bar now or a larger one later, the ability to delay the gratification increased with chronological age (and presumably with intelligence as measured by mental age) and also with IQ (Mischel and Metzer 1962). With intelligence contributing to the ability to delay gratification, the genes for intelligence would be more strongly selected

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for in climates where survival of cold winters necessitated food storage.

Once scarcity starts, it is necessary to ration the stored food. Mastery of the arithmetic needed is facilitated by intelligence. More complex social rules, such as eating only food stored by your family, may be required to facilitate storage. Higher intelligence appears to be needed in a society storing food than in one where hunter-gatherers find sufficient food for the day and eat it soon afterwards.

Another systematic difference found by Binford was between effective temperature and the extent to which hunter-gatherers were nomadic or settled. Fully nomadic cultures were most common near the equators and diminished into the temperate regions, only to increase again as the arctic was approached. He reports (p. 14) that "fully nomadic" strategies characterize 75% of the hunter gatherer cases located in a fully equatorial environment...; high mobility is also found in 64.2% of the cases in semi-tropical settings. In warm temperate settings we note a drastic reduction of hunter-gatherers who are 'fully nomadic' (only 9.3%), and in cool temperate settings the number is still further reduced (7.5%). Then as we move into boreal settings the number of fully nomadic groups increases slightly (11.1%), and in full arctic settings it increases drastically (reaching 41.6%)." None of the sedentary hunter-gatherers were reported from the tropical and semi-tropical regions.

Part of the relationship may derive from food storage. It is hard to sustain a nomadic lifestyle if one has extensive food stores to be moved.

High intelligence appears less useful in a nomadic band that frequently relocates. The burden of carrying artifacts from camp to camp prevents the development of any but minimal handicrafts. A highly specialized tool used for a single purpose may not be worth carrying (making the intelligence needed to invent and use such a tool of little value). Any shelters built must be of a simple form, since they will soon be abandoned.

In contrast, in a settled form of life, artifacts could be accumulated. The basis would be set for the discovery (if intelligence permitted) of the planting of specific food crops or the domestication of animals. With the ability to store artifacts, more elaborate handicraft industries can emerge. Intelligence is likely to be more of an asset in the production of such handicrafts than simple hunting and gathering.

Lynn, after drawing attention to Torrence's finding that people in northern latitudes make more tools and more complex tools than those in the tropical and subtropical latitude, suggests that this may reflect the benefits of carrying on more activities in northern latitudes. However, smaller tool assortments in the tropics may also be due to the inconsisten-

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cy of a large tool assortment with a migratory lifestyle (i.e. a cost rather than a benefit consideration).

Colder temperatures increase the advantages of a well built permanent home over a simple shelter, and are hence more likely to lead to permanent settlement. In colder climates permanent houses and fancier clothing are needed for protection form the cold. The construction of these require higher spatial intelligence. It is necessary to visualize how different building materials will fit together to provide a house, or to visualize how different pieces of material will fit together to make a garment. Tests of the ability to visualize how such pieces can be combined to make designated objects are frequently used in intelligence tests, creating a presumption that intelligence (and visual and spatial abilities in particular) would be an asset in the construction of such artifacts.

Lynn devotes much attention to the benefits in cold climates of having genes that lead to intelligence. He devotes no attention to the possible cost of these genes. Yet an important question is why everyone doesn't have the genes that lead to high intelligence since high intelligence would appear desirable to all.

For instance, after devoting much attention to demonstrating the correlation between head size and intelligence, and also noting the Beals, Smith, and Dodd (1984) finding that head size increased with latitude, he interpreted the correlation as being due to greater benefits of intelligence in northern areas. Another possibility exists. The brain, an organ which consumes a disproportionate amount of the body's energy (about 20%) also produces a disproportionate amount of its heat. In warm climates disposal of this heat could be a disadvantage of the genes that led to high intelligence. In cold climates, this extra heat would be an advantage. In effect, a secondary function of the brain is heat production. Energy is used to support a larger brain, rather than being wasted through shivering. A byproduct of the larger brain is higher intelligence, a fitness increasing characteristic. This implies that the optimal brain size would be larger in cold climates even if the benefits of intelligence were equal in all climates.[3]

Intelligence and basal metabolism are correlated (for documentation see Miller 1991). If this correlation arises because some genes both

[3] Although it is plausible that larger brains consume more energy and produce more heat than smaller brains, Hatazawa et al (1987) using positron emission techniques, found a very strong negative correlation between brain size and energy use per unit volume, sufficient to eliminate any positive correlation between brain energy and use and brain size.

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increase basal metabolism and raise intelligence, these genes would have been preferentially selected for in colder climates, creating a correlation between other characteristics that reflect adaptation to high latitudes (such as skin color) and intelligence.

Finally, it should be noted that because of the low (but clearly positive) correlation between brain size and intelligence, the differences between races in brain size can explain only a small portion of the observed differences in intelligence. Thus, the genes that determine intelligence appear to be many more than those that determine brain size. However, differences in the frequencies of the genes that determine brain size may be good indicators of the extent to which populations have been selected for intelligence.[4]

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[4] Or the differences in brain size may reflect selection for factors that have little to do with intelligence, such as ease of passing a birth canal in a pelvis whose design is determined by considerations of locomotion.

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WHY ARE RACIAL DIFFERENCES IN INTELLIGENCE NOT LARGER?

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The gene of the ability to taste phenylthiocarbamide (PTC), a psychophysiological trait, has (see Weiss, Lehrl, and Frank 1986, p. 142) a frequency of about 0.50 among Caucasoids, a frequency of about 0.38 among Japanese, of 0.13 among Navajo-Indians, and of 0.70 among Australian aborigines. The most impressive fact of Lynn's review on race and population differences in intelligence is their smallness. Differences between social strata within one population are larger than between races. We all know that an occupational group with higher education, whether black, white or yellow, has a mean IQ of about 125, the social stratum of unskilled workers a mean of about 90. In view of such social differences it will be always controversial, to draw from a lower mean of the Blacks in the United States the conclusion that Negroids are generally less intelligent. At best, such an inference should be based on representative samples of Caucasoids compared with pure Negroids from Africa where all social ranks are filled by one and the same race. Lynn's review showing a 30 IQ difference between Caucasoids and pure African Negroids is more persuasive evidence that this difference has a genetic basis than has hitherto been available.

Despite many thousand years of relatively independent evolution, Mongoloids in East Asia and Caucasoids in Europe (and in the New World) appear to have very similar gene frequencies of general intelligence. The similarity holds whether you are an adherent of a major gene locus (Frank, 1985) or of a polygenic basis of intelligence. However, if the polygenic hypothesis is correct then the IQ-correlation of about .50 between spouses would lead to a very rigid caste-like social stratification, far more effective than it ever has been in India. On the alternative theory, a major gene locus for intelligence with an allele frequency of about 0.20 (Weiss, Lehrl and Frank, 1986) for a gene Ml responsible in the homozygous state for an IQ of 130 is in accordance with the facts of social mobility within developed societies, where two generations are sufficient to climb or fall the social ladder from top to bottom, a fact which could have Mendelian segregation at such a locus as a background. In

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order to get the percentage of the homozygous M1M1 in the total population we have to square the gene frequency 0.20 and get 4% (and 5% with the correction for the increase of homozygous individuals by assortative marriage).

The crucial question is, what are the evolutionary forces which have stabilized and are still stabilizing such a frequency of 0.20 of high IQ individuals and a general population mean of about the same level in Mongoloid and Caucasoids, with about 68% M2M2 individuals (mean IQ 94) and about 27% heterozygous M1M2 (mean IQ 112).

In developed societies high intelligence of a person is of such an advantage, that one wonders why the major gene (or allele) M2 responsible for lower intelligence has survived with a frequency of about 0.80. A small correlation between IQ and reproductive success, extending over ten generations (see Weiss 1990), could easily result in a dramatic change of gene frequencies. In order to explain the similarity between Japan and England we need not go back as far as the Würm glaciation, but have to look for the developed societies during the last maybe 3,000 years, and during the centuries in which the New World was settled.

The explanation I propose for the persistence of the low IQ allele is that a large number of people of low intelligence is necessary for the preservation of social stability. A stable social hierarchy needs a small number of high IQ individuals at the top, a greater number of individuals of average intelligence for the middle positions, and a large number of low IQ individuals to perform modest routine work at the bottom. A hierarchical society can only tolerate a very small percentage of high IQ individuals in relatively humble social positions, because such individuals represent always, in view of the limited number of leading positions, a potential threat to the ruling élite. In economically dynamic societies there must always be periodic turbulence, and the antagonism between ruling and powerless high IQ-individuals, i.e. the struggle for leadership of the majority (see Weiss 1991), is the most important destabilizing factor, not the direct challenge to the ruling élite by the low IQ-majority itself. Even egalitarian revolutions are led by an élite who in turn create a new one. All societies have to have a hierarchy with a relatively low fixed ratio of leading to non-leading positions.

To explain the major intelligence differences between the Negroids on the one hand and the Caucasoids on the other, I propose that during the last Ice Age there arose somewhere in Eurasia (compare, for example, Auel 1980) the superior IQ-130-mutant (processing at double mental speed and capable of 70 bit short-term-memory storage capacity per M1-allele, i.e. 140 bit in the homozygous M1M1-state). This mutant must

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have conferred a selection advantage and spread. It appears that this mutation was never introduced into the Australian aborigines and so it probably occurred sometime in the last 40,000 years after the aborigines had become isolated in Australia. A pack of mammoth hunters of about a dozen men with an IQ of 94 and half a dozen heterozygotes with an IQ of 112, led by an alpha male with an IQ of 130 became an optimal foraging unit. Such a one-level hierarchy, based on a division of labor correlated with intelligence, was the prerequisite for the rise of multi-level societies. However, this rise was not accompanied by a fundamental change of the stabilizing forces of the genetic polymorphism itself. It seems that multi-level hierarchies in Europe and East Asia were very reluctant to create additional niches for gifted surplus offspring where survival could be correlated with reproductive success above average. In the future it will be an open question whether the advent of electronics will create more such niches, and in this case societies, which have developed social mechanisms to tolerate and to absorb a growing percentage of humble high-IQ individuals with families could have an advantage. This may already have occurred in Japan.

The difference between IQ 100 and a mean IQ of 83 among Australian Aborigines suggests a difference of a size, comparable to the difference of body height between a Spaniard and a Filipino. However, this is an illusion caused by IQ normalization. Real test scores of shortterm memory capacity, as the product of mental speed (reaction time is only one possible operationalization) and memory span, both underlying general intelligence, range from 70 bits for IQ 94 up to 140 bits for IQ 130 (Frank, 1985) and show a skewed distribution. In other words, an IQ difference of 20 or 40 points does not mean a difference of 20 or 40%, but a difference of such an absolute order of size (compare also Lehrl and Fischer, 1990), if multiplied by the benefits of social hierarchy, that in the long run can account for the difference between a computer and a tool of an Australian aborigine. In populations with a mean of 90 a decrease of IQ-related achievements of about 10% seems to be suggested; in reality in such populations the gene frequency of M1 is zero and the achievements of such populations are accordingly meager.

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OVERCOMING THE LIMITATIONS OF IQ

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Lynn presents a thorough survey on empirical findings about the IQ of races and draws important conclusions on the races' contributions to civilization and the evolution of Homo sapiens. The crucial point is the biological endowment of races. In this respect the question arises whether his assumptions about biological aspects of intelligence have exhausted all possibilities discussed at present. We will concentrate on:

1) the concept of biological intelligence,
2) its measurement on ratio scale level (prerequisites are a unit of measurement and an absolute zero point), and
3) the transformation of the reported IQ-points into the capacity of short-term memory storage which is measured by bits. This is a scientifically very promising measure of mental efficiency.

Biological Intelligence

Eysenck has suggested a guiding model which helps to determine the biological core of general mental efficiency. He distinguishes between biological, psychometric, and social or practical intelligence. For the latter we prefer the term socioecological intelligence. According to Eysenck, biological intelligence is the structure of the nervous system which enables us to behave intelligently – to learn, memorize, solve problems, etc. Psychometric intelligence is measured by traditional IQ tests. Although they usually aim to measure biological intelligence, they fail to do so because performance is – at least to some extent – influenced by social factors such as education, culture, and parental upbringing. He estimates that the percentage of genetic determination of IQ measurement amounts to about 70%.

Socioecological intelligence is the application of IQ in practical situations of everyday life. It is often considered as equivalent with successful adaptation. Confounding variables are health, drinking habits, personality, socioeconomic status, etc. As has been reported in a great number of current medical communications there are various possibilities to increase the actual mental efficiency in cases where the biological intelli-

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gence is reduced by hypovitaminosis, hypoglycemia, hypoxia, high blood viscosity, or more generally in multi-infarct dementia, by body immobility, etc.

There are sometimes simple measures of intervention to increase biological intelligence. Various changes in psychometric and socioecological intelligence can be explained by biological impairments. Therefore, not only psychologists and anthropologists are strongly interested in biological intelligence but also medical psychologists and physicians. Possibly some mental insufficiencies of races can be treated by medical methods.

The majority of the tests Lynn refers to are roughly culture fair. That means that the influence of social factors is relatively restricted. Therefore, his results may give a sound estimate of races' biological IQ. However, the application of the IQ is restricted since the level of measurement is on an ordinal or interval level. The latter is questionable because it is based upon a normal distribution of intellectual capability. This is rejected by the findings of Weiss. The reaction times of the races, in particular their decision times which Lynn presents, are convincing magnitudes to support his suggestions that there are differences in biological intelligence because reaction times are assessed as typical indicators of biological intelligence. But the reaction times as they are taken by Lynn present only rank orders of the races.

Ratio Scale

To reveal more information on the real differences in mental endowments one has to overcome the limitations of the IQ-points, since they are based on the distributions of performances in reference groups. Differences in the intelligence of races are presented as IQs or as standard deviations. IQ-points are a measure of relative frequency and therefore we do not know the degree of the differences in mental capacities which are attributed to the individual. We, however, try to measure the mental efficiency on a scale which has an absolute zero point. These results are on a scale level which is familiar to life scientists who are working with the centimeter-gram-second-system. If biological intelligence could be measured on a ratio or even absolute scale level it could be linked directly to the above mentioned biological statements. On this level of measurement arithmetically simple rules or even laws can be found as the discoveries of Weiss have shown. From genetic models on intelligence Weiss derived three types of persons (Caucasoids) who differ in the speed of information processing which is an important component of biological intelligence according to ratios of integers, namely, 2:3:4.

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Searching for pure and undistorted measures of biological intelligence, we found two information psychological components, the capacity of central information processing with the dimension bit/s, and the capacity of keeping bytes of information available for intelligent management (memory span, or immediate memory, or duration of presence). The capacity of bytes seems to be equal to the storage time (in seconds) until the rapid decay starts. The product of speed in information processing (bit/s) and duration of presence (s) equals the short-term memory storage (bit). This is the capacity of the amount of bits that a person can manage immediately. Average German adults achieve 80 bits. The capacities of short-term memory storage vary widely. The standard deviations are 30 bits. But they are not distributed normally outside the range of the mean + 1 sd.

The individual capacity determines or, more precisely, constitutes psychometric and socioecological IQ. According to empirical standardizations, IQ can be matched with the capacity of short-term memory storage.

Transformation of IQs into Bits

We determined the capacities of short term memory for the means of general IQ which Lynn reported about the races. This way, we get the following rank order:

Mongoloids:	IQ 105.5 -> 90 bit (= 100 %),
Caucasoids:	IQ 99.4 -> 79 bit (= 88 %),
SE Asians:	IQ 90.7 -> 64 bit (= 71 %),
Amerindians:	IQ 87.4 -> 58 bit (= 64 %),
Negroid-Caucasoid Hybrids	IQ 82.1 -> 48 bit (= 53 %),
Negroids:	IQ 74.4 -> 30 bit (= 33 %).

It is striking that the capacity of short-term memory storage of the leaders (Mongoloids) amounts to exactly the triple value of that of the Negroids who are found at the other extreme. That means that – compared with Negroids – Mongoloids are capable of handling triple the amount of information consciously. Therefore, Mongoloids are able to solve far more complex problems rationally or to develop a more profound knowledge about reality. Amerindians and South East Asians lie in the middle with about 60 bit each. The Negroid-Caucasoid-Hybrids and Caucasoids are somewhere in between. Possibly a biologist would get far more information out of these data. Referring to these data it must be kept in mind, however, that these are only approximations because the transformations are based on psychometric IQ-tests in which not all biases can be

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excluded. Nevertheless, an important result of our transformations of IQ into bits is that the races' differences in mental efficiency are greater than the IQ suggests, e.g., 90:30 (bit) instead of 106:74 (IQ-points). These findings are a challenge to the ethical responsibility of the scientists working in these fields.

The information psychological transformation of Lynn's data does not give a reason to change his conclusions but it opens ways to refine the knowledge on the mental efficiency of races.

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HAS THE STUDY OF RACIAL DIFFERENCES IN INTELLIGENCE OVERCOME ITS RACIST ORIGINS?

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It seems that Professor Lynn's target article shows proof that differential psychology's haunting ghosts have appeared once again, at the risk of justifying some racist conceptions as well as discrediting our science which still has to often convince people of its methodological relevance and theoretical interest. Can such a famous psychologist and competent scholar accept scientifically studying the relationship between racial differences and intelligence without realizing the ethical and social implications of the thesis he will defend? We have seen in the past the disastrous influence of hierarchically oriented racial theories and we cannot believe that Richard Lynn is unaware of the consequences. Lynn's choice of propounding a speculative and unverifiable evolutionary theory of racial differences in intelligence shows us that he is not afraid that certain social Darwinist extremist followers could find in his assumptions a theoretical justification of what they would feel to be a political society's necessary adaptation to this differential statement.

Does one have to recall again how the 19th century construct of races based on phenotypes is exceedingly dubious? Are people such as Melanesians, Ceylonese or South-Saharan Africans who live in equatorial countries to be classified in the same racial category because of their skin colour? We still know that race taxonomy for Mongoloids, Caucasoids, Australoids and Negroids, actually appears to be biologically questionable. Who can now admit not knowing the large inconsistencies revealed by genetic studies on population distinctions? These findings have given proof that every population is *genetically polymorphous* (Lewontin, 1974) and that, according to the genetic characters under consideration, human populations present different genetic relationships. When, for instance, a comparison based upon HLA-A and HLA-B groups of tissue frequency shows a hort genetic distance between Indo-Europeans and African-Negroids, one must however take into account that these latter populations are genetically very distant from Asiatics, Amerindians and Oceanians. On the other hand, when immunoglobulin molecular structures (Gm groups) are compared, European and Oriental populations look genetically similar

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and are both very distant from Africans. Yet, it is well known that genetic variations are very much higher within-races than between- races as established in the 1970's by several studies concerning protein variation and blood group distributions, 85% of global genetic variations can be explained by intraracial group variability (Lewontin, 1972; Loehlin, Lindzey, & Spuhler, 1975; Latter, 1980). What is the scientific interest of a distinction between races when no one significant genetic differentiation between them is proven?

Nevertheless, let us consider the facts that Lynn thinks support the assumption of a strong dependence between a mean level of intelligence and ethnic characteristics. The first set of results is relevant to the comparison between mean IQs of various racial groups: Mongoloids (97-110), Caucasoids (94-107), south east Asians (80-95), Negroids-Caucasoids (66-944 Amerindians (70-90) and Negroids (65-81), Yet, we've known for a long time that the use in cross-cultural studies of our classic intelligence tests such as for instance the Wechsler Scales (14 out of 15 were used in the quoted studies with Amerindians) or even *Culture-Free* tests, is problematical (Biesheuvel, 1949). As evoked but unfortunately quickly rejected by Lynn, several contextual factors could play a role in these between-group IQ differences (Berry, 1974), thus requiring that the study of these differences should be approached from an interactionist position. In addition, assuming that IQ-tests' construct-validity is nearly the same whatever the ethnic-population may be (Hakstian and Vandenberg, 1979), comparison of psychometric intelligence levels is all the less biased when the tests which are used are similar. As one can see in tables 3 and 4 or in tables 5 and 6, the diversity of the IQ-tests in the selected studies tends to go against unbiased results. A last word on these results: even though Lynn seems to be very well informed on this subject, one can be a little bit astonished to see that standard-deviations are not jointly presented with mean IQs for *every* selected study. This omission does not allow the reader to compare the magnitude of the intra-ethnical group variability with what is here considered as the between-races genetic variability.

The second main set of results supporting Lynn's hypothesis of racial differences in intelligence is derived from Arthur Jensen's choice reaction time (CRT) studies. Though several authors have found fault with Jensen's RT decomposition paradigm (Longstreth, 1984), the relationship between information processing parameters such as mean median RT or trial-by-trial intraindividual variability and psychometric intelligence seems actually indisputable. According to Jensen himself, the magnitude of this negative relationship could be about .50; one must consider that Jensen thinks that

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the across trials intraindividual variability is perhaps more basic than the mean median RT, with respect to the correlation between RT parameters and psychometric intelligence (Jensen, 1987). But the interpretation of this relationship is not as obvious as Lynn seems to believe; there are several other different explanations that Jensen's hypothesis postulating RT parameters as behavioral measures of some biological and hereditary characteristics of the human central nervous system (Mackintosh, 1986). Carlson, C.M. Jensen & Widaman (1983) have for instance shown that voluntary, sustained attention, arousal or orientation may be involved in this relationship. Furthermore, the data and findings in table 7 are presented in an imprecise and ambiguous manner: what must we think for instance of the -.94 correlation between decision time (DT) and IQ, computed on 2 sets of 5 measures each? Are the deviations between the 5 ethnic-group's mean DTs significant or not? What are the values of the within-group correlations between DT and IQ?

Another argument inducing Lynn to insist that the two races with the highest intelligence levels are the Mongoloids and the Caucasoids concerns their significant contribution to civilization. Nobody would dispute the fact that progress in civilization in so far as a value and a model of social organization has emerged from Asian and European crucibles. But for which scientific reasons is it possible to assimilate what one must primarily consider as a cultural evolution with a biological evolution? Once generated by biology, culture has not developed because of genetic influence (we know the weakness of the between ethnic groups genetic variations) to the contrary, there is every indication that culture is more probably the product of many acquired characters which have been handed down.

Lynn's neo-Darwinian explanation of the evolution of racial differences is founded on the assumption that the "higher races" emerged because some *Homo erectus* populations had to overcome the problems of survival in cold temperate climates in Europe or in the northern latitudes of Asia. According to this hypothesis, Caucasoids and Mongoloids would have more highly developed intelligence than the populations living in tropical and subtropical Africa because of higher cognitive demands and consequently, of a stronger selection pressure. Lynn thinks that what he believes to be [quite solid evidence for a positive association between brain size and intelligence] is sufficient proof for his theoretical argument. We have computed the uncorrected weighted correlation for the 16 mentioned studies (N = 38647); this correlation is about .14. Whether this correlation between brain size and intelligence is regarded as a weak or strong relationship is a subjective judgment; but is this evidence really a

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good argument? Many anthropologists are far from sharing Lynn's opinion because of the numerous contradictions found by paleontologists or speciation biologists. The fact that the weak inter-ethnic genetic variation is noted more longitudinally than latitudinally (i.e. not with climate differences) is one of the many contradictions that go against the assumption of race hierarchization by selection pressure (Piazza, Menozzi and Cavalli-Sforza, 1981) quoted in Blanc, 1984).

In conclusion, we feel that Lynn's compilation of differential statements concerning groups designated as races, and his attempt to propound an explanatory theory, seem to express the strength of his conviction concerning the interest of research and theory on racial differences. Though Lynn has an absolute right to academic freedom, one may perhaps inquire as to whether such a conviction is not prejudicial in regards to an ethical approach towards the potential relationship between ethnic-groups and psychometric intelligence (Zuckerman, 1986). We think that when the reader could get the impression that the author is trying more to convince rather than to strictly present data and discuss ideas; the risk is high that such a proposal concerning the evolution of racial differences in intelligence may play a part in the development of a racist ideology.

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ESSAYS ON GERMANIC RELIGION

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RACE DIFFERENCES IN INTELLIGENCE: A MICROEVOLUTIONARY AND ECOLOGICAL PERSPECTIVE

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The paper on "Race Differences in Intelligence: A Global Perspective" by Richard Lynn yields us an extensive outline of the research in human intelligence. The first question should concern the nature of human intelligence, its meaning in evolutionary perspective and the contemporary concept of human race and its use in recent anthropology.

In my opinion, the intelligence is one part of human cultural adaptive complex. Its original meaning is to secure the optimal reaction of an individual to certain environmental factors in the framework of cultural adaptive reactions; it naturally includes tool use, tool making and artificial modifications of the environment (Blumenberg 1983, Geist 1978, Vancata and Privratsky 1983 a, b, Vancata et al 1981, 1986). However, the reaction norm depends not only on the parameters of an individual but there is also a strong dependance on the experiences of the individual and his group or population. The cultural traditions of a group, the social structure, social status and "adaptive level" or technological level of the group, etc. as well as physiological parameters of a given population are of a great importance for the formation of cultural adaptive mechanisms. The last point is closely connected with the concept of race in recent physical anthropology and human biology and genetics (cf. Benes 1979, Korn 1978, Vogel and Motulsky 1979, Wolpoff 1980).

The static concept of race that is used by Lynn has been seriously challenged by both physical anthropologists and human geneticists many years ago because of continuous morphological variability between major races, gene flow, migrations and isolation of various populations and many other factors (Benes 1979, Geist 1979, Santangelo 1989, Vogel and Motulsky 1979). It is almost impossible to establish precisely whether the degree of intelligence in individual human groups has been influenced by the genetic parameters specific for the major races or by the non-specific genetic factors and up to which degree. These two facts make it difficult to accept the author's concept as really comprehensive. There is no doubt

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about the differences between human populations in morphological, physiological, biosocial and cultural (Benes 1979, Korn 1978, Vogel and Motulsky 1979) even if such rough and unprecise taxonomic and classification criteria are used to dividing global *Homo sapiens* population into Caucasoid, Negroid, and Mongoloid groups. The results on intelligence tests presented by Lynn confirm that there are also some differences in individual reactions that were tested by IQ tests.

The meaning of IQ test data and the interpretation that they show race differences in IQ's have been challenged many times, especially by physical anthropologists, physiologists and psychologists (Korn 1978). The racial differences in intelligence could be due to various factors including physiology of reaction, brain laterality, learning abilities, ontogenetic patterns etc. (Corballis 1989, Sinha 1387) that are very different in individual populations, and dependant on their adaptive complexes. Also motivation to pass the tests could differ in different cultural traditions.

But how to interpret these facts? The strict genetic interpretation and basic rejection of environmental influences and factors presented by Lynn is at least one-sided and doubtful to some degree. The relations of genetic and environmental factors have been shown by numerous scientists (Benes 1979, Blumenberg 1983, Geist 1978, Omodeo 1987 Vogel and Motulsky 1979, Zahavi 1987). Similarly, there is no doubt about the close relations of biological and cultural factors as well as the importance of ontogenetic development and parameters of behavioral and cultural adaptations (Santagelo 1989, Sinha 1987, Vogel and Motulsky 1979, Zahavi 1987). Furthermore, every human population has its microevolutionary history and population and cultural dynamics (Piontek and Marciniak 1930). Yet this does not mean that a simplified "environmentalist" interpretation gives us a more comprehensive explanation. The attempt to explain the racial differences solely on the basis of social and economic differences is even less precise that the genetic theory.

The social and economic factors and differences cannot be identified with environmental or ecological factors for several reasons: 1) they are only part of "human ecology" together with many abiotic, biological and other socio-cultural factors (Geist 1978, Vancata and Privratsky 1983b), 2) these factors cannot be limited on one racial group of the society but they depend on the social stratification of a given population (Benes 1979, Korn 1978, Santagelo 1989 Vogel and Motulsky 1979), 3) the ecological factors are more general and more differentiated (Geist 1978 Vogel and Motulsky 1979); there are remarkable differences between "poor" black people in the U.S. and e.g., Africa, and not only genetic ones (Korn 1978). Consequently, the IQ tests should be primarily interpreted within

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individual microevolutionary lines and the ecological history of individual lines should be taken into account much more consistently.

The interpretation of individual results of IQ tests and their comparison is not easy and I have many doubts about it. The tests were conducted by many methods in individual populations and racial groups. The results of IQ tests can hardly be strictly compared from the point of view of their age, number, sex ratio and social determination, etc. With the exception of means, there are no more precise statistical parameters e.g. standard deviations and there is no statistical comparative analysis. Sex differences and specific features typical for males and females should also be studied. Perhaps such "sexually differentiated" information could help us to define more precisely the differences or similarities between the populations. The ontogenetic development of intelligence should also be taken into account because ontogeny has been shown as a very important factor in the formation of behavioral reactions (cf. Sinha 1987).

While the black African populations seem to be really different from the other populations the differences between European and American white populations (Caucasoids) and those from eastern Asia (Mongoloids) are very probably not significant. It is also very problematic to interpret black Americans as "Negroid-Caucasoid Hybrids." Furthermore, this interpretation would mean strict genetic determination of intelligence which has never been proved.

If my arguments are correct the hypothesis on racial genetic determination of intelligence cannot be proved. There are no real differences between Caucasoids and Mongoloids and the genetic "hybridization" of intelligence per se is doubtful. I do not intended to argue that there are no differences between human populations and the results of IQ test have no meaning. In this sense, the study by Lynn presents a lot of data in a new comparative perspective. However, the data should be examined in a more general framework which should respect more precisely microevolutionary trends and ecology of human populations.

Lynn's second paper presents a very general hypotheses on the role of intelligence in human evolution. However, the paper seems to be based on a too general evolutionary hypothesis to be really related to the intelligence problem in human evolution. Some or the presented facts and data seem to be incorrect or misleading.

First, there is no significant correlation between brain size and intelligence (see Henneberg 1987 a,b, 1988). Even the correlation coefficient .35 in university students (which cannot be taken as a representative sample) is very low for claiming that "Brain size is positively correlated with intelligence...."

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Quite the opposite, the cranial volume does not change significantly in *Homo sapiens* or, according to Henneberg (1988), there has even been a slight decrease in cranial capacity. The evolutionary history of man shows a probable increase of intelligence since the Palaeolithic period which could be reflected to some degree by the differences in IQ tests between some human populations (e.g. Australian aborigines and the white Australian population). Such differences should be primarily related to the cultural adaptive mechanisms, type of tool behavior and technology.

I disagree with the oversimplified hypothesis on selection for more intelligent individuals. This is doubtful for several reasons: 1) Intelligence as such could hardly be selected, because there is no direct definable genetic basis of human intelligence and its nature is very complex (Benes 1979, Santangelo 1989, Vogel and Motulsky 1379), 2) Natural selection operates on various levels not only that of individuals but also on the group and population levels (Omodeo 1987, Vogel and Motulsky 1979) (kin selection, group selection or sexual selection), 3) There is no evidence that the intelligence increase (i.e. stable permanent one) is an advantageous adaptive mechanism (Zahavi 1987) in connection with the differentiation of "races", especially in pre-technological stages of human evolution. 4) Intelligence cannot be understood as an isolated outstanding human feature and the brain is not the result of intelligence evolution (Blumenberg 1983, Korn 1978, Santangelo 1989). Intelligence is only one part of cultural and biosocial adaptive mechanisms and it is closely connected with tool behavior, learning abilities and cognitive abilities (Vancata et al 1381, 1986).

The evolutionary scenario is not very comprehensive. We cannot say that there is no relevant difference between the polycentric or monocentric theories (the multi-origin or single origin theories) (cf. Brauer 1984, Frayer 1985, Henke 1988, Wolpoff 1980) particularly from the point of view of evolution of human society, culture and intelligence. Knowledge of the period in which the major human races originated, i.e. whether the Caucasoids/Mongoloid divergence was at the stage of *Homo erectus* or early *Homo sapiens* (or even early Neanderthals), or at the time of Upper Paleolithic *Homo sapiens*, is extremely important for constructing any scenario of human evolution, because of the evolutionary and cultural differences between early *Homo sapiens, Homo erectus* and Upper Palaeolithic Man (Brauer 1984, Henke 1988 etc). Furthermore, the dating as well as the structure of the evolutionary scenario is based on rather shaky data or one-sided hypotheses (e.g. Stringer and Andrews) not acceptable for most palaeoanthropologists.

The ecological interpretation of human evolution seems to me rather

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superficial which is probably partly due to the oversimplified understanding of hominid ecology and evolution by Geist (1978) quoted by Lynn several times. The climate in Africa and Eurasia changed many times and numerous migration and changes in adaptive strategies should be supposed (cf. Brauer 1984, Frayer and Wolpoff 1985, Henke 1988. Larsen 1987, Vancata 1988, Wolpoff 1980, etc).

My impression is that the problem of evolution of human intelligence and its racial differentiation should be closely related to the evolution of the hominid brain and tool behavior (cf. Blumenberg 1983, Hennberg 1987b, Vancata 1983, Vancata et al 1981, 1986) as well as to the problem of behavioral and cultural adaptation (Benes 1979, Piontek and Marciniak 1990, Santangelo 1989). Naturally, it is not quite clear whether the racial variability is random or correlated with some physiological parameters and whether the physiological differences that originated as climatic and ecological adaptations could also influence the results of IQ tests.

If there is really some adaptive meaning of intelligence with respect to the evolution of human tool culture, social organization and behavior as basic factors of hominid evolution (Geist 1979) its highest selective value had to be before the Upper Palaeolithic period (Corballis 1989, Vancata et al 1986), i.e. prior to the racial differentiation. The Upper Palaeolithic, Mesolithic and Neolithic stage of evolution was not very different in individual major races (Benes 1979, Jelinek 1972, Korn 1978, Santagelo 1989). Perhaps some cultural retardation during the Neolithic period in Europe and northern latitudes of Asia in comparison to Africa and south east and southern Asia can be found. However, IQ coefficients of recent African and south Asian populations seems to be rather low which is contradictory to Lynn's hypothesis.

It is also probable that the adaptive meaning of intelligence as a part of cultural adaptation has been different in individual evolutionary lines and they were compensated by other features of cultural adaption. The development of individual human microevolutionary lines and racial populations should be understood as a very dynamic process with different mode and rate in human evolution. Therefore the results of research on the IQs of recent populations, does not necessarily reflect the real evolutionary pattern.

It is extremely difficult to reconstruct the evolution of behavior and culture which naturally concerns also the evolution of human intelligence and its racial differentiation. Nevertheless, the paper by Lynn presents a new approach to human evolution which should provoke qualitatively new and more detailed discussions on human evolution integrating biological and cultural aspects of the hominization process.

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PANDORA'S BOX AND THE ESKIMO'S NOSE

Ian J. Deary
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Racial differences in IQ-type test scores have been of interest to psychologists for many decades. For those involved in this area of research the main aim has been to find an explanation for the differences. The first paper by Lynn takes a rather novel line to support a genetic explanation. It purports to present evidence to indicate that black-white IQ test score differences might in part be due to group differences in the speed or efficiency of elementary cognitive abilities. It is suggested that these abilities reflect neuronal efficiency, i.e. that they offer an insight into the 'biological' bases of the test score variance. Since this is the corner of intelligence research with which I am familiar I will concentrate on this aspect of the paper.

Early on in his first paper Lynn states that, "...recent work has shown that reaction times are a measure of intelligence and appear to represent differences in the neurological efficiency of brain processes." A perusal of more up-to-date research than is cited to support these claims (e.g. Longstreth, 1984; Jensen and Vernon, 1986; Welford, 1986; Lawson and Saccuzzo, 1986; Kranzler, Whang and Jensen, 1988; Widaman and Carlson, 1989; Neubauer, 1990) would reveal that the strongest comment which it is reasonable to make is that measures of choice reaction time (often using the Hick procedure) are replicable but weak correlates of IQ scores. The correlations are usually in the region of 0.2. To state that RT indices are a measure of intelligence implies that they have similar validity characteristics to IQ test scores, a claim which is unsustainable. The most one should claim is that RT indices share a very modest amount of variance with IQ test scores. Nevertheless, this fact is interesting enough to warrant further research because it raises the possibility that the two measures share cognitive processes. In fact, Lynn does put forward the view that some processes contributing to RT variance underlie IQ test score variance. This is certainly a reasonable hypothesis, but one should acknowledge that there is an alternative view which envisages RT differences as a consequence rather than a cause of IQ scores, a possibility which, if correct, would substantially reduce their importance in the

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present discussion (see Mackintosh, 1986; Howe 1988; Ceci 1990 for expositions of this view).

On the second claim in the above quote from Lynn, this is no more than a very speculative hypothesis. Quite what the relationship is between RT and neuronal processing is unknown. The analysis of reaction times extends from the subtraction work of Donders in the mid-nineteenth century to the mathematical modelling of Luce (1986) and Laming (1988), and attempts to discover the evoked potential correlates of reaction time. Even after consideration of these different areas one would be in advance of the evidence in making definite claims about the brain processes which support RT performance and contribute to its variance.

Lynn states that a demonstration of racial differences in RT would rule out many social and environmental explanations for racial differences in intelligence. Would it? Because RT indices are such poor correlates of IQ test scores one could achieve almost any result across the races without seriously damaging either a genetic or environmental explanation of racial differences in ability test scores. If blacks were slow on RT it could mean that they had lower performance on the non-IQ related parts of RT variance (96% of it!). Without some form of causal modelling, as opposed to simple group comparisons, the RT indices are at best very tenuous circumstantial evidence for his hypothesis, and there still remains the body of opinion which hypothesizes that the social and environmental pressures which affect IQ test performance might also affect RT performance (Howe, 1988). However unconvincing this latter hypothesis is, it should be addressed.

The inclusion of a section on civilization advancement is unwise, because it takes the paper out of the realms of the already problematical empirical evidence to the regions of rhetoric, one-off phenomena and historical analysis. By definition, any species or group which survives has been successful in the evolutionary struggle. Rushton's (1988) recent work on r/K strategies has attempted to describe how the success of different human races has been achieved by different degrees of trade-off between what amounts to sexual restraint and high intelligence versus lower intelligence and reproductive productivity. The standard of evidence gathered by Rushton has convinced very few, if any, scientists in the relevant areas of research (see Zuckerman and Brody, 1988). To suppose that the approach used by Lynn, i.e. analyzing whether some forms of human social organization were the products of higher mean group intelligence using the metric of the sporadic production of the occasional genius, will be more successful is naive. The area of behavioral ecology is a notoriously difficult one in which to construct and test hypotheses. After

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a long list of pitfalls for the unwary theorist, Clutton-Brock and Harvey (1984) warn that, "Associations between ecological parameters are commonly responsible for correlations which have no causal basis, while it is often the case that several different functional hypotheses predict the same correlations between behavioral and ecological traits."

The review based on Table 1 might well be used to demonstrate the near-impossibility of comparing studies in this compilation and to wonder whether it will ever prove possible to conduct well-designed studies using adequately-matched population samples and cross-culturally compatible tests. Those who are tempted to try to make something intelligible from the imperfect studies here would do well to consider how they might select suitable subjects and tests for such a study. This sense of the difficulty of the enterprise is heightened by Lynn's use of ad-hoc accounts of the results which are discrepant, e.g. the Spanish studies and the differences between Indians in India and in the U.K. "Mongoloids tend to be late maturers," is used to explain the low IQ of young Japanese children. But if IQ test scores have a physiological basis it is difficult to envisage how Mongoloids would underperform when compared with their Caucasoid counterparts at the ages mentioned. What CNS developmental delay mechanisms are proposed? Is there evidence from, for instance, electroencephalographic studies to support this delayed maturation hypothesis?

It is surprising that Lynn denotes the report by Fick (1929) as a "good study." Whereas the degree to which under-education, social disadvantage generally and prejudice contribute to the relatively low IQ test scores of modern day blacks in the U.S.A. might be disputable, one is immediately sympathetic to the notion that blacks in South Africa in 1929 would be seriously disadvantaged on tests and that their scores relative to whites would be likely to reflect many sources of environmental poverty and social repression. Their relative lack of formal education, the social disadvantage and poor nutrition at that time, not to mention unfamiliarity with test-taking and motivational factors, make this unlikely to be a worthwhile study. Knowing, from reading the work of Flynn (1987), the detailed scrutiny that is needed to extract passably meaningful results from cross-national research, few of the studies gathered by Lynn are reported in much depth, and the mixture of occasional study details and some very general assumptions and post-hoc explanations is unconvincing.

Moving on to the section in the first paper which deals with reaction time differences across races, it is not just extreme malnutrition which affects RT indices. RT may be slowed by quite moderate doses of alcohol (of course, it recovers) (Rabbitt, 1988). We have measured median and

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standard deviation of RT using the Jensen-type device (similar to that used by Lynn) and have shown that a history of just five severe hypoglycemic episodes over several years in diabetic subjects will affect the brain sufficiently to cause a significant slowing of decision time and an increase in standard deviation, i.e. changes in those RT parameters that are most closely related to IQ test scores (Langan, Deary, Hepburn & Frier, in press). Performance IQ is lowered slightly also, but not verbal IQ. Therefore, quite infrequent, moderate insults to the brain can slow reaction times, which certainly leaves open an environmental (albeit biological) explanation for possible race differences in RT indices. The summary paragraph which asserts that there is a widely accepted explanation for the correlation between RT and IQ test scores glosses over much debate in the literature (see above). Explanations for the correlation are speculative, on both the reductionist side (where processes involved in RT performance are thought to underlie intelligence differences) and on the strategy side of the argument (where fast RTs are seen a consequence of high IQs).

Of Lynn's own RT work that is relevant to the hypotheses here, little detail is given, although the results appear to be in line with his expectations. Later he supports his findings with reference to the RT work of Vernon. Readers should consult Vernon's work to see that Vernon's RTs are not straightforwardly comparable with those of Lynn. Vernon tends to use a conglomerate of so-called RTs which are, in fact, the speeds of yes/no responses to, in some instances, quite difficult, and certainly IQ-like, questions. If one loads RT tasks with cognitively difficult questions then shared variance (genetic and/or environmental) becomes less surprising. The interest of the low correlation between RT indices and IQ test scores lies in the fact that IQ responses appear to be so far removed from the relatively non-cognitive demands of the Hick RT.

It is appropriate to leave the sociologists, anthropologists, paleontologists, etc. to criticize the rest of the first paper and most of the second paper. There are a few points on which I should like to register some doubt. Baker's criterion 13 for the achievements of civilizations does not stand up well to what we know about the treatment of people in recent conflicts by representatives of *all* of the major racial groups mentioned by Lynn. Lynn mentions the work of Pickford in support of his evolutionary account of the racial differences in IQ test scores. But Pickford (1988) has made two other comments which do not necessarily support Lynn's speculation. First, Pickford suggests that human evolution may have stopped for non-verbal intelligence about 0.5 to one million years ago. Does this accord with the climatic evidence? Second, even where Pickford

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is willing to allow that climatic changes do drive evolution, including the evolution of behavior, the examples he mentions do not always support Lynn's ideas. It is clear from Pickford's account of man's struggle to survive in semi-arid climates that the effort involved in finding so-called 'cryptic food supplies' needed a considerable level of what most of us might be happy to call intelligence. Cold climates are not the only testing climates. Last, when Lynn discusses evolutionary selection pressures that might increase intelligence I suspect he often means the form of intelligence which Jerison (1988) would be more likely to call encephalisation. I am not aware of studies demonstrating differences across the major human races on this variable and its relation to IQ test scores is, necessarily, even more obscure.

Another review of the thorny issue which Lynn deals with in the first paper may be judged worthwhile if there is a wealth of convincing new evidence, or a Flynn-like (1987) fine-toothcombing of the past evidence. Neither of these objectives is achieved. Therefore, the Pandora's box has been opened once more, some may say, to no great purpose. What of Lynn's evolutionary account of the origins of intelligence test score differences between groups? It puts me in mind of Kipling's *Just So* stories. When one is more used to examining factor analyses or anova tables the type of evolutionary evidence that is offered here is difficult to evaluate. One suspects that there is an infinite number of more or less plausible historical accounts of the causes of racial differences in IQ test scores, and that all would leave aside uncomfortable facts (like the intelligence needed to exist in hot arid climates). The issue addressed in Lynn's first paper is difficult enough, but the evidence is far too sparse to be telling the story of how the eskimo got his/her flat nose.

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REPLY TO COMMENTARIES ON RACIAL DIFFERENCES INTELLIGENCE

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The seven commentators on my two papers on racial differences in intelligence split about equally into the four (Eysenck, Miller, Weiss and Lehrl, Frank and Papp) who accepted the thesis in general terms and elaborated or suggested modifications to a number of points, and the three (Deary, Juhel and Vancata) who were unsympathetic to the papers and raised various objections. Before answering the commentaries it may be useful to summarize the eight principal points made in my two papers.

My two papers on racial differences in intelligence were concerned to set out the evidence on a worldwide basis and to advance a theory to explain how the differences have evolved. The papers argued eight principal points.

1. In relation to a mean IQ of approximately 100 (and standard deviation of 15) for Caucasoids in Europe, North America and Australasia, Mongoloids typically obtain mean IQs in the range of 97-110, south east Asians 80-95, Amerindians 70-90, Negroids 65-81, and Negroid-Caucasoid hybrids 81-94.

2. The three major races show the same differences in reaction times as they do in intelligence, suggesting a neurological basis to the differences.

3. The mean IQs of the races are also associated with their achievements in the development of civilization during the last 5,000 years.

4. Mongoloids and Amerindians have a different pattern of intelligence from Caucasoids and Negroids, consisting of strong visuospatial abilities and weak verbal abilities.

5. The consistency of the races' levels and patterns of intelligence, found in a variety of geographical locations and over 5,000 years of history,

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cannot be explained in environmental terms. Therefore we have to infer the presence of genetic differences.

6. Racial differences in intelligence are associated with differences in living standards. This is best explained by the theory of genotype-environment correlation, which states that peoples construct their own environment in accordance with their genetic capabilities. A genetically intelligent people will make a superior environment.

7. If racial differences in intelligence have a genetic basis, some explanation is required for how the differences have arisen. Two possibilities were considered: (a) that the cold environments of Eurasia acted as a selection pressure on the Caucasoids and Mongoloids for enhanced intelligence necessary to solve the problems of hunting, tool and weapon making, and keeping warm; (b) among Caucasoids and Mongoloids mutant alleles may have appeared for enhanced intelligence and a shift towards a high visuospatial – low verbal profile in the Mongoloids, and these alleles spread through the populations because they conferred a selection advantage.

8. Where populations experience selection pressure for increased intelligence, they have typically responded by evolving larger brains which have afforded the necessary enhanced problem solving, information processing and learning capacities. The same thing has apparently happened in the evolution of the human races, where brain sizes are greater in Mongoloids and decrease in the other races in accordance with their mean IQs.

Most of these points have been taken up by the commentators. I shall discuss first the points made by the four sympathetic commentators.

One of the problems for the environmentalist is to provide an environmental explanation for the existence of racial differences in intelligence. The best that many environmentalists can come up with is that blacks in the United States are a minority and suffer discrimination from whites, and that this lowers their intelligence: a theory which ignores the fact that orientals and Jews are also minorities who typically perform better on intelligence tests and at least as well in achieved socioeconomic status as whites.

Even less persuasive is the thesis that because blacks' great great grandfathers were slaves this has in some way caused them to have lower IQ's today. A much more convincing suggestion is made by Eysenck to the

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effect that nutrition may be a more important variable affecting intelligence that has generally bee supposed. I agree that nutrition is the most likely environmental factor contributing to racial differences in intelligence. It is probably true that the races who obtain lower mean IQ's also have poorer nutrition and that this has some adverse effect on their intelligence. Nevertheless, there is the problem of why some races are able to provide better nutrition for their children than others. In the United States the per capita income has been about double that in Britain for several decades, e.g. 6324 U.S. dollars in the U.S. as compared with 3677 U.S. dollars in Britain in 1975 (United Nations, 1978). The average income of blacks in the United States is about two thirds that of whites (Borjas, 1986). Thus, the average incomes of American blacks is higher than that of British whites, and much higher than that of Hong Kong Chinese (1975 per capita income = 1740 U.S. dollars). How is it therefore that American blacks with good incomes could fail to feed their children well? If that is indeed the case, which is not demonstrated, the answer would probably be that they do not apply their intelligence to the problem. This is frequently the case in Africa, where there are widespread taboos on eating eggs, vegetables, insects and fungus (e.g. mushrooms) and these foods are not eaten although they are widely available (Newman, 1980).

This paradox of the failure of Negroids to use readily available foods is best explained in terms of genotype–environment correlation theory. This states that peoples with genetically high intelligence will provide a better environment for their children, and hence maximize their children's intelligence, than people with poor intelligence. Eysenck has usefully drawn attention to the increasing evidence that the provision of adequate nutrition for their children is probably the major environmental process by which intelligent people optimize the intelligence potential for their children.

Two interesting questions are raised by Weiss. Firstly, he presents his theory that there are three genotypes for intelligence corresponding to IQs of 94, 112 and 130. These three genotypes can be identified from the analysis of information processing tasks such as reaction times which show the presence of the three distinct groups. He argues that the normal curve for intelligence is an artefact arising partly from environmental effects blurring the distinctiveness of the three groups and partly simply from the way the scales are constructed to give a normal distribution. Furthermore, Weiss suggests that the mutant for the IQ of 130 appeared in the ancestral Caucasoid-Mongoloid population in Eurasia, possibly about 40,000 years ago, and never penetrated the Negroids or Australian Aborigines, who

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therefore lack the high IQ allele. The implication of this theory is that the standard deviation for intelligence should be lower in Negroids and Australian Aborigines than in Caucasoids and Mongoloids. It is well known that in the United States the standard deviation is lower in blacks as compared with whites, e.g. Jensen and Reynolds (1982) in their analysis of the WISC-R standardization data report standard deviations for the full scale IQ of 14.08 in whites and 12.75 in blacks. Owen (1989) also reports a somewhat lower standard deviation in blacks than in whites in South Africa. This interesting theory deserves further examination.

The second question raised by Weiss is why there are still so many unintelligent people around. Intelligence is such an important attribute that people with the allele for low IQ should have been bred out of the population many generations ago. His answer to this problem is that a population needs a range of intelligence to ensure social stability. All human societies are hierarchical with a small number of leaders, some middle management and a large number of workers. So long as the workers are less intelligent than the middle managers and the leaders, they will know their place and social order will be maintained.

A possible problem with this ingenious proposal is that it appears to be a group selection theory in so far as groups with a range of intelligence will have a more stable social order than those where everyone has high intelligence. Group selection theories are not viewed favorably by geneticists because the unit which either reproduces or fails to reproduce is the individual. So the problem is why individuals with low intelligence have survived in spite of the selection pressures against them, of which poor nutrition and high mortality are probably among the most important.

The problem of why low intelligence alleles have survived for so long is also raised by Miller. His solution is that high intelligence may have a cost because a large brain is more expensive to maintain than a small brain. This is especially the case in the tropics because a large brain generates more heat. This heat is more difficult to dissipate in the tropics, whereas it is an advantage in cold climates. This could have been a secondary mechanism for the evolution of larger brains among those living in cold climates.

The problem of the continued survival of low intelligence alleles remains a puzzle. The answer may be simply that it takes a long time to breed out disadvantageous alleles and those for low intelligence have not yet been eliminated. Now that welfare states have been established in all economically developed countries to provide incomes and health care for the unintelligent, they are likely to be with us for the foreseeable future.

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An interesting discussion of the problem of the magnitude of the differences in mean IQs between the races is presented by Lehrl, Frank and Papp. They start by pointing out that the IQ means are only rough and ready measures of biological intelligence because they are affected by a variety of environmental factors. Furthermore, IQs are not wholly satisfactory measuring instruments. Strictly speaking, IQs are an ordinal scale, i.e. a scale which puts individuals or groups in a rank order, but where the differences between the ranks are not of equal size so that we cannot say that an individual with an IQ of 140 is twice as intelligent as an individual with an IQ of 70. The most satisfactory type of measuring instrument for scientific purposes is a ratio or absolute scale, i.e. a scale which has a true zero and where the units of measurement are equal intervals throughout the entire scale. Inches are a ratio or absolute scale because there is a true zero, the difference between 2 and 3 inches is the same as the difference between 10 and 11 inches, and 8 inches are twice as long as 4 inches.

To overcome the weak status of the IQ as a measuring instrument, Lehrl, Frank and Papp transform the mean IQs of the races into short term memory storage capacities (bits). This measure has an absolute zero and provides a ratio (absolute) scale. On this scale the mean capacity of Mongoloids is three times as great as that of Negroids, and consequently Mongoloids have much greater problem solving capacities. This analysis makes a valuable contribution to the problem of the measurement of the IQ and of the orders of magnitude of the abilities differentiating the races.

The problem of the nature of the selection pressures in the colder regions which operated to increase the intelligence of the Caucasoid and Mongoloid peoples is addressed by Miller. In my paper I suggested that the principal selection pressures were the cognitive problems involved in hunting large animals and in keeping warm. Miller suggests the operation of two further factors, namely the need to store food for future use and the adoption of a sedentary rather than a nomadic life style. These are important points which deserve further elaboration. Food supplies in the cold latitudes were highly seasonal. Berries and nuts could have been available for a short period in the autumn and it would have been useful to store them for future use. This would have required foresight. Meat on the hoof was also highly seasonal because herds of reindeer, moose and the like migrate annually over long distances. There would have been short periods of abundant supply as the migrating herds approached the humans' base camp and long periods when there were no animals within hunting range. The same applies to migrating salmon which are plentiful and relatively easy to spear for a short period each year when they return

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to the rivers to spawn.

This seasonality in the availability of food supplies would have forced early Caucasoids and Mongoloids to develop forward planning abilities and the skills required for food storage, as Miller suggests. Meat is particularly difficult to store for long periods. In the winter it could have been stored in ice houses. Meat can also be stored if it is cut into thin slices and dried. However, this is a tricky operation because dried slices of meat can easily turn toxic and this could have taken its toll on the less intelligent.

A further problem entailed with seasonality of food supplies in the northern latitudes would have been that of predicting the annual appearance of the migrating herds of animals and fish. The movements of migrating animals are consistent and could be predicted by peoples who developed a knowledge of the calendar obtained from astronomical observations. Early men with this knowledge would be ready for the appearance of the herds and able to take full advantage of them. These problems of catching migrating animals would have put early Mongoloids and Caucasoids under further selection pressure for enhanced intelligence and foresight.

Miller argues that a further effect of the necessity to store food for future use, to develop more sophisticated weapons for hunting large animals, and to keep warm in winter was to force early Caucasoids and Mongoloids into sedentary life ways. Many groups took up permanent residence in caves such as those near Beijing and in the valley of the Dordogne, and others built dwellings mainly from mammoth bones and skins. Once permanent residences were established new possibilities for developing improved and more varied tools and for food storage were opened up.

Miller's proposal that this set of problems would have put early Caucasoids and Mongoloids under selection pressure to develop greater intelligence and foresight raises the question of the relationship of intelligence to the capacity for forward planning and delay of gratification. The relationship of these capacities to intelligence has not been well worked out and it may be that certain non-cognitive traits of this kind were enhanced in the Caucasoid and Mongoloid peoples. The possible existence of racial differences in these traits is an important problem for future work.

I turn now to the three commentators who were unsympathetic to my treatment of the problem of racial differences in intelligence. Juhel gives the standard environmentalist approach to this question. He begins by reminding us that many genetically determined traits have greater

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variation within races than between races (e.g. height). The essential point, however, is that there is a smaller number of traits where there is considerable variation between races, e.g. pigmentation, type of hair, facial characteristics, etc. Intelligence may well belong to this group of characteristics.

Secondly, Juhel questions the validity of the intelligence test data for the different racial populations as measures of genetic differences and suggests that an interactionist position should be adapted. I think this right and I tried to make this point by discussing the application of genotype – environment correlation (interaction) theory to the problems of racial differences in intelligence. The point is an important one and deserves elaboration in a little more detail. We should think of racial differences in intelligence as arising through two mechanisms. Firstly, through direct genetic transmission of differences in brain size and probably in the efficiency of neurological processing capacity revealed in the reaction time differences. Secondly, through the capacity of more intelligent peoples to provide a better environment for their children, as a result of which their children's intelligence is nurtured to a higher level. The task of working out the contributions of these two processes to racial differences in intelligence still needs to be addressed.

With regard to the racial differences in reaction times, Juhel seems to accept that reaction times are related to intelligence although he raises other possibilities such as that differences in attention or arousal might be responsible for the correlations almost invariably found between reaction times and IQs. A full discussion of these alternatives is given by Jensen (1982) who argues against attentional and other factors. The principal argument against the attention hypothesis for the race differences data is probably that there are no consistent racial differences in movement times. Failures of attention should produce slower movement times as well as slower decision times, yet the data show that the races mainly differ in the speed of decision making. Most of the inter-group differences in decision times are statistically significant and we have invariably found that decision times are correlated with intelligence in this set of cross national studies. Full details are given in the articles cited in the first paper.

So far as racial differences in the development of civilization are concerned, Juhel agrees that these exist but considers that they can be explained in purely cultural terms. Yet the Negroid and Australian Aborigine peoples have never made any of the significant discoveries which constitute civilization. They never invented the concepts of a written language or arithmetic, building in stone, the construction of a legal system and so forth, set out in detail by Baker (1974). These discoveries

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require intelligence, and the failure of the Negroid and Aborigine peoples to make them is consistent with their low levels of intelligence.

So far as the racial differences in brain size are concerned, Juhel's overall correlation of .14 is misleading low because it includes the early studies based on teachers' assessments and university degree results which would have had poor reliability. The correlation of .35 between IQ and brain size obtained by Willerman is a more reliable figure, and this should be corrected upwards to allow for the less than perfect reliability of the measures and for the restriction of range in this sample of university students. These correlations would give a true correlation of around .43. Nevertheless, I agree that the correlation remains relatively modest and therefore we must conclude that the increase in brain size in Caucasoids and Mongoloids is probably not the only the neurophysiological factor responsible for their greater intelligence. Some other neurophysiological factors are probably also involved. One of the most promising recent findings concerning the neurophysiological basis of intelligence is the discovery that people with higher IQs have a lower glucose metabolic rate in the brain (Haier, Siegel, Nuechterlein, Hazlett, Wu, Paek, Browning, and Buchsbaum, 1988). This is the kind of factor which needs to be examined for racial differences in the neurophysiology of intelligence.

The paper by Vancata is written from a biological and evolutionary perspective. His main point is that it would be desirable to look more closely at the microevolutionary environments in which different peoples have evolved and try to relate these to the specific cognitive abilities which have evolved in response to the environmental demands. This is a worthwhile enterprise. I have tried to make some progress in this direction by going beyond the concept of global intelligence and documenting the strong visuospatial abilities of the Amerindians and Mongoloids. Others have also made a start on this question. Jensen and Reynolds (1982) have shown that Negroids in the United States have relatively strong memory abilities, and this has also been found by Owen (1989) in South Africa. No theory of how these relatively strong memory abilities might have evolved has been advanced. A somewhat similar finding was obtained by Kearins (1976) in a study of the cognitive abilities of Australian Aborigines. Kearins found that the Aborigines have stronger visual memory abilities than Caucasoids and suggested that these could have evolved because of the need to make fine visual discriminations in a desert environment. In some cases it may be that a particular people have strong specific or primary abilities because advantageous mutants have occurred. In other cases the selection pressure of survival in particular environments may have altered allele frequencies to produce strong

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primary abilities. Vancata is correct in pointing out that this is an important area for future thought and work.

Vancata makes two principal points regarding the evolution of intelligence. Firstly, he says that high intelligence could not have been selected for because the nature of intelligence is very complex. I do not think the complexity of a characteristic prevents it being selected for. Flying is very complex, but it evolved in the birds because it conferred a survival advantage. Shifting from cold bloodedness to warm bloodedness is a complex change, but it took place when warm blooded mammals evolved from cold blooded reptiles. Vancata says that intelligence could not have conferred a survival advantage but this is difficult to accept. The brain of *Homo sapiens* is about three times as large as that of the apes from which it evolved and this evolutionary development could only have taken place if intelligence conferred a survival advantage. In addition intelligence possesses the genetic characteristic of dominance. This is shown by inbreeding depressing, i.e. breeding by closely related individuals such as cousins, which produces a reduction in the intelligence of the children (Bashi, 1977; Jensen, 1983; Agrawal, Sinha and Jensen, 1984). It is a well known theorem in genetics that the frequency of dominant alleles increases for characteristics subject to directional selection (Fisher, 1930; Plomin, 1987). Hence the presence of inbreeding depression for intelligence indicates that it has been selected for during the evolution of the Hominids.

I was a little surprised to find Vancata agreeing with Henneberg that there is no correlation between brain size and intelligence in Man. Henneberg himself has found a statistically significant correlation of .14 among Polish students, and this underestimates the true correlation because of the restriction of range of ability in the sample. The sixteen studies summarised in Table 2 of my second paper constitute overwhelming evidence in favour of a positive association between brain size and intelligence, and the reluctance of evolutionary biologists like Henneberg and Vancata to accept the existence of this positive association is curious.

I agree with Vancata that the dispute between the two rival theories of human evolution, i.e. the multi-regional theory and the single origin theory, is by no means settled. I have no wish to take sides in this dispute and I do not think it makes any significant difference to my theory of the evolution of racial differences in intelligence which of them is right. The multi-regional theory states that the races became differentiated about one million years ago and evolved in parallel, whereas the single origin theory states that the races evolved during the last 100,000 years. The multi-regional theory gives the races more time to develop differently and

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therefore makes differences more probable. In fact, it is inconceivable that peoples who evolved in isolation over one million years and in whom brain sizes increased by around thirty percent in parallel, would have ended up with precisely the same intelligence. The single origin theory allows the races about 100,000 years to evolve differences in intelligence and this also is quite feasible. I believe therefore that either theory is compatible with the evolution of racial differences in intelligence and we can leave evolutionary biologists to fight this battle out between themselves.

Deary concentrates his observations mainly on the racial differences in reaction times. He argues that the correlation between reaction times and IQs are only around 0.2 and that this is so low that reaction times cannot be regarded as an index of the neurological substrate of intelligence. This is hardly a fair summary of the studies which have been done on this issue. It is true that some studies have reported correlations of around 0.2, but others have reported substantially higher correlations. Frearson and Eysenck (1986) obtained a correlation between the Progressive Matrices and Odd Man Out reaction times of 0.62. Jensen and Reed (1990) propose quite properly that this needs correction for attenuation, and they estimate the true correlation as 0.72. Even if the low correlation of 0.2 is accepted, reaction time speeds still appear to be picking up a neurological efficiency component of intelligence and the existence of racial differences in this component points to a neurological factor underlying the intelligence differences.

Deary's argument that whatever the racial differences in reaction times had turned out to be would carry little weight for the genetic or environmental explanations for racial differences in intelligence is surely incorrect. If Negroids had turned out to have faster or equal reaction times to Caucasoids or Mongoloids, the genetic theory would have been quite seriously damaged. The result would have indicated that in this neurological component of intelligence there are no racial differences, and this would have undermined the genetic explanation for the IQ differences.

I do not think Deary's (like Juhel's) discussion of the reaction time results takes sufficient cognizance of the fast movement times of the Negroid children. These tend to rule out malnutrition, lack of cognitive stimulation, poor attention, low motivation or whatever other environmental conditions may be advanced by people like Mackintosh and Howe for slow decision times and low IQs of Negroid children. In evaluating the data on this question it is important to look at the evidence as a whole.

In his comments on the cold stress theory of the evolution of

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enhanced intelligence in Caucasoids and Mongoloids, Deary suggests that hot arid environments would have been as cognitively demanding as the cold environments of Eurasia. This suggestion does not stand up to examination. In the first place, none of the major races evolved in hot arid environments although some minor races were pushed into them in quite recent times which would not have been long enough to bring about genetic changes in intelligence. The Australian Aborigines lived principally in fertile river valleys until Europeans drove them into the hot arid environment of central Australia during the last couple of hundred years (Kirk and Thorne, 1976). Secondly, anthropologists' accounts of peoples living in hot arid regions suggest that these are not particularly cognitively demanding. The only major problem is obtaining water. When water supplies are found the remaining problem of securing food supplies is reasonably straightforward. Australian Aborigines in the hot arid deserts are able to find plant, insect and egg foods throughout the year (Gould, 1969). The same is true of the !Kung bushmen of the Kalahari desert, where the active adult population need only spend two or three days a week to collect sufficient food for the whole group, including children and the elderly (Howell, 1979). These peoples do not encounter the acute scarcity of food during the winters which confronted the Caucasoids and Mongoloids when they migrated into the temperate latitudes, let alone the problems of keeping warm. The refutation of this point shows just how difficult it is to construct a credible alternative theory to explain the evolution of enhanced intelligence in the Caucasoids and Mongoloids as a result of the cognitive demands of survival in cold winters.

It is evident from the last paragraph of Deary's commentary that he prefers quantifiable experimental data to the less precisely quantified and often one off historical events which form much of the subject matter of biology. His dismissal of the evidence on racial differences in the construction of civilisations and of the theory of cold stress as the selection pressure responsible for the enhancement of intelligence in the Caucasoids and Mongoloids is reminiscent of Popper's rejection of the Darwinian theory of evolution as science on the grounds that it is not falsifiable. This is an unduly narrow view of science and the nature of scientific explanation. The data of a number of sciences consist of naturally occurring phenomena. Scientists in these disciplines construct theories to explain these, such as cosmologists who attempt to explain the origin of the universe as well as evolutionary biologists and anthropologists dealing with evolutionary history. Paleobiologists think it perfectly sensible to collect evidence and construct theories on how precisely crocodiles evolved some 200 million years ago (Tarsitano, Frey and Riess, 1989). This is a problem

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in principle quite similar to the question of how the Caucasoids and Mongoloids came to evolve their higher intelligence, and both are well within the domain of science. I do not think Deary has adopted the biological perspective necessary for thinking about problems in evolutionary biology to which the problem of racial differences in intelligence belongs.

In spite of some differences between the data of evolutionary biology and the experimental sciences, both kinds of science entail the same basic processes of assembling data and constructing theories to explain them. As the data accumulate and the alternative theories are discussed, a consensus gradually emerges among those working on the problem. This process has occurred during the last quarter century with regard to the problem of the causes of racial differences in intelligence. The accumulating evidence has brought about a significant change from the virtually unchallenged environmentalism of the 1950s and 1960s. A survey of the views of 661 professionals with some expertise on this issue carried out by Snyderman and Rothman (1988) found that those who considered that racial differences in intelligence have some genetic basis outnumber environmentalists by approximately three to one. Environmentalists have become a diminishing band, increasingly isolated from the majority who have come to accept that the weight of the evidence points to a significant genetic determination of racial differences in intelligence.

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SOME COMMENTS ON LYNN'S THESIS BY AN ANTHROPOLOGIST

Roger Pearson
Institute for the Study of Man

Few should have any serious problem with Lynn's thesis that superior intelligence was a product of evolutionary selection. Likewise few would dispute the statement that man's hominid forebears evolved from hominoids in tropical or sub-tropical areas. Indeed, the distribution of primates was generally restricted to such areas until hominids began their successful attempt to populate more temperate latitudes.

It is also true that Pygmies in the equatorial forests of Africa can in a matter of hours secure sufficient food for several days, and that food-collecting and hunting in tropical forests does not pose significant difficulties at any time of the year. So friendly is the forest toward the Pygmies that they often refer to it as "their father." By contrast, many areas in the more northerly latitudes, especially during the period of the Fourth Ice Age, posed challenges that would tend to select, on a group basis, in favor of higher intelligence. In the course of evolution, man generally collaborates on a group basis, and even though mutations occur in individuals it is the phylogenetic continuum, the breeding group and the gene pool that transmits these mutations to future generations. Furthermore, because early men lived in small groups, the breeding circle was closely circumscribed both geographically and socially, so that evolution could proceed with surprising rapidity in a challenging environment. Indeed, evolution often proceeded by radical jumps when less competitive groups were eliminated *in toto* by environmental changes which occurred too rapidly to allow for selective adaptation, or were faced by overly-strong competition from rival groups or subspecies.

However, some of Lynn's critics have taken issue with his attempt to approach his thesis in conceptual terms which only take account of the major geographical macro-races. To some extent they will justifiably recoil from attempts to divide all the diverse peoples of today's world into just a few major racial groups, such as Caucasoid, Mongoloid, Negroid, Negrito, Australoid. Such Weberian typologies are certainly helpful in

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assisting us to conceptually organize the mass of complex anthropological data, and have their basis in causal reality, but we must appreciate the fact that these categories *do* represent Weberian "ideal" types (i.e., conceptual labels identifying broad categories grouped by reference to extremes of variation in an otherwise confusing landscape). While it is easy to identify individuals who exhibit those characteristics which most clearly distinguish "Caucasoids" from "Mongoloids," "Negritoes" from "Negroes," and so on, the extreme variants (extreme because they were genetically isolated for long periods of time under widely different selective conditions) are usually linked by intervening genetic gradients. Some of these comprise intermediate populations which came into being due to environmental distinctions intermediate between the different geographical extremes. Others are the result of interbreeding between formerly disparate groups – a retrogressive evolutionary trend as far as speciation is concerned. Such interbreeding may often take place between only slightly differentiated neighboring groups. But at other times hybridization may result from a genetic admixture between widely disparate populations brought into contact as a result of migration – a process which is even now accelerating in our modern world due to greatly enhanced opportunities for migration and hybridization.

One of the basic forces behind evolution is the propensity for all living organisms to over-reproduce. In a natural environment, this tends to result in over-population and causes expanding groups to attempt to intrude into neighboring territories. The more competent groups are usually successful in depriving the occupants of their territories. However, in more complex societies it should also be remembered that culture plays a selective evolutionary role, sometimes over-riding biological factors. Thus among contemporary human populations, dysgenically-oriented cultural value-systems have deprived many genetically competent groups not only of their willingness to reproduce themselves, but also of their desire to prevent their breeding grounds from being invaded by more prolific and culturally survival-oriented subspecies, even though the latter may be inferior in intelligence.

Lynn's argument for an evolutionary basis for differences in intelligence is certainly in accord with what we know about evolution, adaptation and speciation in the higher forms of animal life and also in pre-urbanized human societies. The evolutionary process involves two distinct processes, which among hominids generally operated concurrently. One is the well known process of adaptation to a specific environmental niche,

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but the other comprises an enhancement of the organism's ability to vary its response to changes in the environment rather than to become passively adapted to such changes. This, from the evolutionary point of view, is the reason for the development of intelligence in the hominid species and subspecies. While pigmentation is purely a passive adaptation to environmental demands, intelligence has a more general utility which may aid survival in a wide diversity of environmental conditions, and even enable the organism to respond to rapid changes in the environment – something that passive adaption may actually hamper rather than facilitate.

Lynn's critics have mostly chosen to ignore this aspect of his thesis and divert attention away from the importance of the subject by trying to argue that he is at fault in grouping all Mongoloids and all Caucasoids as though they were unitary groups sharing common qualities. This is a weak point in his exposition, forced upon him, no doubt, by the sparsity of information concerning the intelligence of the many different subgroups which are linked together under the broad Weberian concepts of "macro-races." His thesis would be better received if he had been in a position to present data which would show how IQ varied between the various local races and micro-races which he lumps together under the headings Caucasoid and Mongoloid. Many of these, such as the Vietnamese, represent intermediate populations partially mixed with non-Mongoloids. Obviously, Vietnamese are genetically and biologically different from North Chinese and Koreans. The Vietnamese (Annamese), Thai, Cambodians and Malays, although justifiably included in the broad concept of a Mongoloid "macro-race," are in fact all populations which contain elements of autochthonous non-Mongoloid genetic origin. The same can be said of the residents of the more mountainous regions of southern and southwestern China, where Australoid influences still survive among the "Chinese" populations which inhabit those areas today.

To exhaustively test Lynn's hypothesis, further data needs to be collected which would enable us to compare the IQ scores of the local micro-races. Lynn's thesis that differences in IQ are related to racial history would be substantially reinforced if such data revealed that IQ corresponded to the evolutionary origins of the populations under study, as identified by such techniques as DNA analysis, blood group analysis, and traditional physiological characteristics. The technology for this is now available. All that is required is the massive funding that such extensive research would necessitate.

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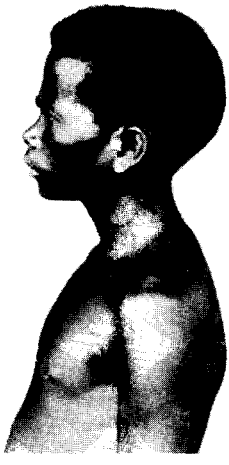
1. Recent studies of Japanese samurai skeletal remains suggest Caucasoid affinities.

2. Chinese male from the mountainous province of Yunnan, where Australoid influences survive in the population.



3. Filipino from Luzon showing strong Negrito genetic influence.

4. Malay from Perak, illustrating part Negrito ancestry, presumably acquired from earlier autochthonous peoples.

The so-called geographical "Mongoloid" race actually comprises many sub-races, some of which clearly exhibit the inheritance of genes absorbed from earlier Australoid and Negrito populations. Cavelli-Sforza's survey of linguistic and genetic affinities provides a valuable racial schema against which IQ comparisons could be made along the lines proposed by Richard Lynn.

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In short, further research is needed to enable comparisons to be made between the intelligence of the diverse subgroups that comprise the broad racial categories which Lynn cites. The average IQ of the classic Mongoloids of Mongolia should be compared with that of selected Southeast Asian populations – such as the Khmer of Cambodia, who are believed to be Mongoloids with some Australoid admixture. These data could be compared with the average IQ scores of unmixed Australoids in Australia. If Lynn is right, as I suspect he is, we would expect to find Southeast Asians scoring somewhere between the Mongolians and the Australoids. Such research should satisfy the objections of those who have protested that one cannot meaningfully treat such varied populations as the Mongolians of Mongolia, the North Chinese, Manchus, Koreans and Japanese in a lump category with Burmese, Thai, Laotians, Annamese and Khmers, as though they were equal members of a homogeneous category called simply "Mongoloids." Similar research into the IQ of the various hybridized populations broadly classified as Caucasoid or Negroid should also be undertaken.

Thus we may concede the point made by those critics who argue that the racial history of Southeast Asia – and of other intermediate geographical areas around the world – is racially complex. Southeast Asia reflects not merely Mongoloid but also Australoid and Negrito components. This does not invalidate Lynn's thesis; it merely clarifies the need for much finer racial classification than he has used, and for a further investigation of IQ at the level of micro-races and genetically-mixed populations. A deeper investigation would eliminate otherwise puzzling contradictions and would establish his general thesis beyond reasonable doubt – or disprove it. When researchers incorporate IQ data on populations which are not wholly Mongoloid as evidence of "Mongoloid" IQ, this confuses the data. Racial differences were undoubtedly much sharper in prehistory – and still were at the beginning of the present century – but they are rapidly becoming blurred as a result of increased human mobility, and in some areas the concept of race has already become meaningless other than in an historical context. Not that races are doomed to disappear from the world scene in the foreseeable future. Socio-economic, political, cultural and linguistic barriers still retard the rate of genetic admixture in many multi-ethnic communities – India being the classic example, with its persistent caste system which strongly deters genetic admixture.

Like Southeast Asia, the population of the Indian subcontinent reflects a highly complex pattern of diverse racial components which cannot be

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simply classified as "Caucasoid." It is totally erroneous to assume that Indians, Iranians, Egyptians, Germans and Scandinavians are identical just because they have some qualities in common that cause them to be grouped together in a conceptual "Caucasoid" macro-race. It is this kind of sloppy thinking that has brought the concept of race into disrepute. The concept of race, in the sense of *micro*-races, gene pools and distinctive breeding populations which persist through generations, is essential to any proper understanding of human evolution or even of present day world affairs. Thus, although historically Caucasoids made a major genetic contribution to the Indian subcontinent at the time of the Indo-Aryan invasion, circa 1500 B.C., evidence of which is still strong in the northwest of the subcontinent, the Dravidian speakers of the South retain a dramatically different identity. Mongoloid genes predominate in the Northeast, and Australoid influences are to be found in some of the more remote central and southern areas. There is also a slight Negrito influence in certain hill areas and even in the Bengal delta, particularly in Bangladesh. To illustrate the complexity of the Indian situation – and the importance of race in human history – the Caucasoid Indo-Aryans who subdued Bengal were seemingly few in number, but they successfully established themselves as a land-owning and priestly ruling class over the aboriginal stock of mixed Dravidian and (slight) Negrito ancestry – the latter being most evident in the marshlands of the Bengal delta. Since the aboriginals became an "underprivileged" class under Indo-Aryan Hindu rule, many aboriginal Bengalis converted to Islam after the Moslem Moghul conquest, and after the partition of India opted to join the new Moslem state of Pakistan – subsequently winning total independence from West Pakistan, with which they had no racial connection, as Bangladesh. The land-owning Hindu class fled to India, and today there remains an identifiable difference in appearance between the Moslem Bengalis of Bangladesh and the Hindu Bengalis of India – who still regard the former as inferior.

Relevance of the Matching Dendrograms Created by Cavelli-Sforza and His Colleagues

If the IQ of the diverse ethnic groups in a subcontinent such as India could be determined, the relationship between IQ and the racial origins of the various micro-races as indicated by genetic markers would throw useful light on Lynn's thesis. Indeed, one might well seek to determine the IQs of all the ethnic groups whose genetic and linguistic affiliations

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have been so strikingly demonstrated in recent years by Cavelli-Sforza and his colleagues. Cavelli-Sforza has scientifically demonstrated the different degrees of genetic relationship that link living populations, and has reinforced this by showing how the evolution of languages tends to reflect the racial history of the living races of man. This was to be expected, since in prehistoric times language would have tended to correspond to and define human societal and breeding groups, even though this is no longer the case in all populations of the modern world. Cavelli-Sforza and his colleagues have effectively demonstrated the close historical correspondence of language and race, measuring race by genetic markers determined by the analysis of blood groups and DNA. Their conclusions, incidentally, closely correspond to those reached by earlier researchers such as Carleton Coon, who relied upon anthropometric measurements.

Lynn's thesis could be put to the test by a study which involve the collation of IQ data for all the ethnic groups identified by Cavelli-Sforza and his colleagues, and which would then chart this data against the patterns of ethnic relationship traced in the Cavelli-Sforza schema. In the absence of such a study, attempts to lump Southeast Asians together with Mongols from Mongolia, and then to compare these with an equally broad and diverse groups comprising Europeans, North Africans and South Asians all loosely classified as Caucasoids, is fraught with danger and will assuredly leave Lynn's thesis vulnerable to skepticism. There is another problem. In the existing studies of IQ, American respondents are generally allowed to volunteer their own self-assigned racial status, and many who are actually of mixed racial origin may choose to declare themselves as "white." This will blur the picture and tend to obscure the real racial differences that exist. It is impossible, for example, to take the population of a racially mixed community such as New Orleans and attempt to assign exclusive racial categories to all the respondents. One simply cannot divide the present-day population of major American cities arbitrarily into scientifically meaningful categories of "whites," "blacks" and Hispanics if one's aim is to explore prehistoric evolution. Almost all the blacks in such cities will have some white genes (some being predominantly white) while not a few of those who opt to classify themselves as "white" will have partial black ancestry. Consequently, any comparison between the IQ statistics relating the Japanese population and statistics which purport to reflect the IQ of "white" Americans are not going to be scientifically accurate, because the IQ scores recorded for "white Americans" will likely include many who are of partially Negroid or other racial

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ancestry – and these may be expected to pull down the alleged "white" average. This will continue to be the case so long as those who undergo IQ tests are classified according to their own statements concerning racial affinity, and not by objective scientific analysis. The same thing can be said of the population of modern Britain, which has absorbed and interbred with Eurasians and other mixed blood immigrants from many parts of Britain's former empire.

Prehistoric Evolution of Homo sapiens sapiens

The unproved mitochondrial theory, which as Lynn has pointed out does not affect the potential validity of his thesis, is worth mentioning here. It is a theory that is Hitlerian in the extreme, presupposing as it does that a single race of "supermen" might expand over the entire world, eliminating all rival stocks while retaining absolute racial purity. This is highly unlikely, given the fossil evidence, but there is no question that a single more advanced species *could* have populated the entire world in the course of 200,000 years, just as the mitochondrial DNA theorists claim. But if so, once all the more primitive populations had been eliminated, population movements, genetic mixing and resegregation would certainly have proceeded continuously, even while the *Homo sapiens sapiens* of Western and Eastern Eurasia, still isolated in their northerly Fourth Ice Age environment, were evolving to their highest levels. After the latter appeared, close to 40,000 years ago, in the form of modern Caucasoids and Mongoloids, they seemingly repeated the same process of population expansion, hence the wide dispersal of the Caucasoid and Mongoloid macro-races over the surface of the earth today.

It was these advanced Caucasoids of Western Eurasia and Mongoloids of Eastern Eurasia who in the last 20,000 years sent colonizing bands into the subtropical and tropical regions where older stocks still survived. In these environments the colonizing Caucasoids and Mongoloids undoubtedly mixed with the local populations, thereby raising the intelligence of the older stocks, but also allowing useful local adaptations such as pigmentation and spiral hair to persist, as well as tell-tale characteristics like greater prognathism.

In a process of racial expansion the genetic possibilities were as follows: The more advanced intruders might (a) drive the aboriginal residents into less favorable environments, where they would perhaps become extinct during bad years, (b) exterminate them (more commonly, perhaps, during periods when cannibalism was common), (c) kill the males

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but retain and breed from some of the females, or (d) totally absorb the aboriginals by hybridization. In either of the last two instances the aboriginals would contribute their genes in either greater or smaller quantities to the resultant population.

Genetic admixture of this kind would explain how local qualities might persist while the level of older hominid populations was, over time, raised to sapiens levels – but by no means to equal levels of sapiens accomplishment. Those groups of more highly evolved Caucasoids and Mongoloids which remained in their earlier homelands, far removed from the tropical and semi-tropical areas, would have retained their distinctive qualities and identities, free from admixture until very recent times. But those of their kind that moved back into the subtropical and tropical areas, inhabited by populations that had not undergone severe selection during the Fourth Ice Age, became genetically hybridized with the older stocks, and would have themselves been "levelled down," while "levelling up" the autochthonous stocks by admixture. Their diverse hybrid descendants became locally homogenized into a variety of new subraces, which would have persisted until such time as they were again modified by fresh incursions of more the advanced stocks, equipped with yet more advanced technologies.

General Overview

For the benefit of non-anthropologists who may have read some of the articles about "the African Eve" published in the popular press, we would assert that early *Homo sapiens*[1] evolution did *not* take place in the equatorial forests that were later to become the birthplace of the Negroid peoples. Hominids may well have achieved sapiens status in the quite different environment of the highland savannah of Kenya and Ethiopia. *Homo sapiens*, or something close to it, may have originated and spread out from this highland area, where the Leakey family have uncovered the remains

[1] Of course, the term *Homo sapiens* is itself merely a "Weberian" label, the application of which depends somewhat arbitrarily upon the views of the speaker. What we have is an ongoing chain of evolution with many threads, some of which break and others of which become entangled and merge. Trying to put labels on the fossil remains which provide evidence for the evolution of Hominoids to Hominids, such as Australopithecus, *Homo erectus* and thence to *Homo sapiens* and *Homo sapiens sapiens*, is like trying to put labels on a thermometer – where know where freezing point is, and where boiling point is, but where does cold become warm, and warm become hot?

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of an assembly of increasingly modern-looking hominids dating from over three million to one million years ago. These apparently lived contemporaneously with the much more primitive Australopithecines. Indeed, so much more advanced were they than the latter – so large was the racial gap, one might say – that many conventional anthropologists today question whether the Australopithecines belong anywhere in the ancestral tree of *Homo sapiens.*

Wherever they originated, and it may have been in the East African highlands, *Homo sapiens* may reasonably be assumed to have evolved under the challenge of a non-tropical, temperate climate. While this was taking place, the equatorial forests would still have been inhabited by well-adapted but still pre-sapiens populations. Negroids can hardly be determined in the archaeological record prior to around 9,000 years ago, and are almost assuredly the product of repeated infusions of genes from intellectually more evolved and technologically better-equipped *Homo sapiens* stocks which intruded into their homeland, absorbed the older autochthonous stocks, and raised them to sapiens levels. Whenever hybridization between widely disparate stocks took place, the level of intelligence of the older stock would be raised by admixture with the more advanced population, but some characteristics of the older population, such as greater prognathism, would tend to survive in the new hybrid population. Locally advantageous selective qualities, such as heavy pigmentation and spiral hair form – which have positive local selective value in tropical environments – might persist and become predominant among the hybrid descendants. Similarly, it has been argued that the modern Bantu came into being as a result of an admixture between a very small number of incoming Caucasoids with Palaeo-Negroid populations (which had already become sapiens) of the forest areas, the "birthplace" of the Bantu having been tentatively located in the Sudanese savannah adjacent to the equatorial forests. The Bantu then successfully expanded over wide areas of the East Africa, virtually eliminating but also partially absorbing the Bushmen and Khoisan hunting and gathering populations that had previously occupied those territories.

The Australoid peoples may also be deemed to represent a blend of pre-sapiens stock with expanding *H. sapiens* stock, which admixture would have taken place in South, Southeast and East Asia prior to their migration into Australasia. Subsequent migrations of Caucasoid and Mongoloid *Homo sapiens sapiens* into South, Southeast and East Asia all but eliminated the mainland Australoids and Negritoes in those areas,

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although some Australoid and Negrito genes may still be detected in Southeast Asia and India, and some Negrito populations survive intact in Malaysia. However, even in Australia, the remaining Australoids are now acquiring Caucasoid genes from liasons between aboriginal women and immigrant Caucasoid settlers. Their more primitive Tasmanian relatives no longer survive in pure form, but did contribute their genes to a few segments of the present-day "white" population of Tasmania.

One must not forget, however, that geographical, climatic and even biological (disease) barriers traditionally worked to preserve genetic differentiation, thereby reducing the rapidity of genetic admixture where different populations meet. The importance of geographic barriers to intermixture is illustrated by recent studies of AIDS in Africa. These show that the AIDS virus moves along trade routes, and that villages isolated by dense forest barriers, just a short distance from a well-travelled route, may be completely free of it. Contrariwise, villages on the other side of the forest barrier, if situated on a trade route, often have an extremely high incidence of HIV.

The Mongoloid/Caucasoid IQ Controversy

While accepting Lynn's general thesis concerning the evolution of high intelligence among Caucasoids and Mongoloids during the Fourth Ice Age (the period during which Cro-Magnons, the first Europeans, emerged) one must reserve judgment on Lynn's hypothesis that the slight Mongoloid superiority in IQ over Caucasoids at the present time reflects an age-old disparity between the two races. Lynn claims that the Mongoloids evolved higher intelligence than the Caucasoids because of their alleged exposure to more severe climatic conditions during the Fourth Ice Age than those that shaped the Caucasoids in Europe. The reverse may just as likely be true.

In the first place, Central and Eastern Eurasia did not share the same glacial conditions experienced in Europe, partially because temperatures in Siberia vary widely between seasons, and the summers are much hotter. Secondly, the relatively uniform geographical character of large areas of Siberia is such that in cold periods the belts of flora move south and in warmer periods they move north again. In our ignorance of East Eurasian population history during the last glacial period, it is difficult to speculate on the selective forces to which Mongoloids were exposed, or to compare these with the better known circumstances under which Caucasoids evolved. In Siberia we may assume that the fauna, including we would

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suppose early man, customarily moved with the flora. This does not disprove Lynn's hypothesis, but suggests that we do need to know more about the location of "proto-Mongoloids" and about the climatic conditions under which they lived while Western Eurasia was experiencing the Fourth Ice Age.

Secondly, we *do* know that there have been vast movements of populations (i.e. of genes) backwards and forward along the steppelands that separate Western and Eastern Eurasia in late prehistoric and certainly in historic times. The "frozen tombs" of Pazyryk in the Altai mountains revealed the ice-preserved remains of a Mongoloid prince with his blond-haired Caucasoid wife. The Upper Palaeolithic, that triumph of inventive creation produced by the first modern Europeans (Cro-Magnon Caucasoids), originated in Western Eurasia and spread eastward along the Eurasian steppes to North China, Korea and Japan. It is highly probable that many genes moved in the same direction, since pure "diffusion" is unimaginable in Palaeolithic times. This culture would most likely carried by migrant peoples who eventually became absorbed into the population of the new area.

In short, it is likely that the evolution of *Homo sapiens sapiens* took place in Western Eurasia, and Neanderthaloid remains have been found in Central Asia dating from a period long after Cro-Magnons controlled Europe and Western Asia. The Upper Palaeolithic culture can also be demonstrated to have spread from Western Eurasia into what is now Northern China, Manchuria and Japan, and may have been accompanied by a genetic migration. Ignoring for the moment the views of Allan Wilson, who has contested the mitochondrial DNA theory, the characteristic shovel-shaped incisors and other "Mongoloid" features (the "eskimo's nose" of one commentator in this volume) could have been acquired by admixture of earlier migrating *Homo sapiens sapiens* with older hominid populations already inhabiting parts of Eastern Siberia. It is notable that many extreme Mongoloid characteristics, such as the epicanthic fold, which are deemed to be a product of severe wintry conditions, are by no means pronounced in North China or in Japan – both areas which seem to have had cultural and probably genetic contact with Western Eurasia just prior to the dawn of history. Yet it is these areas which record some of the highest Mongoloid IQ scores, and which were historically the centers of Oriental cultural innovation. Right down into historical times, what is known as Chinese Turkestan or Sinkiang was inhabited by an Indo-European-speaking Caucasoid people. What is more, the Japanese

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upper classes, who invaded the present day Japanese islands from the Asian mainland, were horse-riding Bronze Age warriors who possessed a cultural, technological and religious heritage not too dissimilar from that of the Indo-European Caucasoids of the West Asian steppes. Their language is related to surviving languages in Central Asia, from whence they are deemed to have come, and recent anthropological research has shown that the warrior samurai classes of medieval Japan – the direct descendants of these Bronze Age immigrants – were not only distinct from the aboriginal population of the Japanese islands in pre-conquest times, but their skeletons suggest strong Caucasoid affinities. C. Loring Brace has attempted to argue that this implies that the samurai had part Ainu ancestry, but that argument is not maintainable, and there is plenty of circumstantial evidence to suggest Caucasoid influences dating from the time when the ancestors of the Japanese lived on the Asian steppes adjacent to the Caucasoid Indo-Europeans. Members of the ruling classes in Japan still often reflect a Caucasoid cast of features, sharply contrasting with the more Filipino-like features of the lower classes.

A third question comes to mind concerning the origin of the postulated differences in IQ between the Caucasoids and the Mongoloids. This is the possibility of a recent dysgenic trend among Caucasoids in Europe, which was not replicated among the Mongoloids of China, Korea or Japan. One cannot make much progress by arguing the origins and relative achievements of early West Eurasian and East Eurasian civilizations, although the West seems to have predated the East in the all-important Upper Palaeolithic revolution. The metal ages similarly seem to have originated in the Western part of the Eurasian continent, and spread eastward to Northern China and related areas. The same may be said for the use of wheeled vehicles, and even the tripods used in early Chinese religious rituals are akin to those used in ancient Greek and Roman ritual. But passing over the dispute as to the relative achievements of the two areas of ancient civilization, it is entirely possible that the early Caucasoids may have possessed an intellectual ability superior to that of their present-day representatives. This high intelligence was apparent in European classical civilization, witness the achievements of early pre-Christian scholars such as Archimedes and Pythagoras, but one might speculate that the population of Europe has suffered a severe dysgenic decline over the past two thousand years. Many authors have commented on the dysgenic influence of the Catholic Christian church, which selected its clergy and monks from among the more talented youths, and then

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condemned them to celibacy, thereby eliminating their genes from the gene pool. The Chinese, by contrast, respected their intellectuals, exempted them from warfare, and rewarded them with an economic status whereby they could afford to keep concubines as well as wives, and consequently produce much larger families than the peasantry – the less successful of whom could not afford even one wife.

More recently, too, since the beginning of this century, most West European and North American Caucasoid societies have increasingly "liberated" their womenfolk from the task of childbearing, especially among the more educated and professional classes. This has resulted in a tendency for the brighter women to have fewer children. During most of this time, the womenfolk of the more successful Japanese and Chinese families were discouraged from abandoning their role in the home and continued to produce large families. That situation has since been changed in China and Japan, but only very recently. And dysgenic trends can take effect within a very short span of time.

One last comment on this topic: the content of the West European portion of the Caucasoid gene pool has changed considerably over the past century (as graveyards in London show). This is especially due to an increasing admixture with non-Caucasoid elements, a process which is repeating the experience of earlier Caucasoid populations which once inhabited in North Africa and Western Asia. Even in the United States, increasing numbers who are classified as Caucasoids are actually part Negroid, due to the phenomenon of "passing over." This means that few contemporary IQ surveys of white American or British "Caucasoids" are accurate indicators of original unadulterated Caucasoid IQ. It is further to be noted that Japan, China and Korea have resisted the influx of tropical populations, and that Oriental test scores tend to reveal a narrower spread than is found in the test scores recorded for contemporary "American whites" or "British whites." Such a broader range of scores is to be expected among Caucasoid test scores if a substantial percentage of the "Caucasoid" respondents are not of unmixed Caucasoid ancestry.

I would like to make one more comment. This concerns the possible correlation between head size and intelligence. While this correlation generally holds true in the overall course of hominid evolution, the subject is both complex and obscure, and since I do not regard myself as adequately qualified I prefer to remain agnostic on this subject.

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BOOK REVIEWS

A Fire in the Mind:
The Life of Joseph Campbell
Stephen and Robin Larsen
Doubleday. 618 Pages $30.00

The late Joseph Campbell was for years, until terminated by his death, a member of the editorial board of *The Mankind Quarterly*, a publication of which he thought highly. He is famed, of course, for his deep comprehension of mythology and folklore, and not least for his gift in conveying what he knew and felt to others.

Amongst Campbell's more famous books were *The Hero with a Thousand Faces*, and his four volume *The Masks of God*. Possibly even more encyclopaedic was his six volume *Atlas of Mythology*, which occupied the efforts of his final years.

Many have equated his status in the world of mythology with that of Sir James Frazer and Mircea Eliade, and though he was not committed to any unusual philosophies, such as existentialism, he was more successful than many who did have such commitment to marshalling the evidence for human intellectual evolution, and the effort of man to understand that which was beyond the powers of primitive logical analysis.

While works such as *The Hero with a Thousand Faces* enraptured millions who would otherwise have had no interest in nor comprehension of man's intellectual past, it was his *Atlas of Mythology* that was his most important achievement. Mythological concepts evolved with the evolving human brain and with scientific progress which constantly whittled away the are of the unknowable. Because Campbell traced the spread of mythological concepts along with the spread of earlier human subspecies, and more recently living races, and attributed mythical innovation to a few more talented peoples and cultures, from which ideas spread either by diffusion or by migration, Campbell has been called a racist. This aroused a muted resistance to his work, which hesitated to show itself during his lifetime because of his immense readership. Indeed, when the present

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writer noted that the only typographical error in Campbell's first volume of *An Atlas of Mythology* was a major error in the Key to a series of maps portraying the prehistoric movements of the ancestors of the modern races of man (the purpose of which was to show how the evolution of mythical concepts was related to the increasing sophistication of the human brain), an error which made nonsense of the maps to any poorly-informed reader, he felt obliged to conclude that the error had *not* been unintentional. Briefly, despite the impressive list of editorial staff cited by the publishers as having been engaged in the production of this remarkably handsome volume, the color chart in the Key to the table had been wrongly printed in a way that made nonsense of the detailed and color coded set of maps that it was intended to explain. True, an erratum "idiot" slip had been added, but this was supplied loose in the book, and was so small that the chances of its being lost were extremely high. One would have thought that a responsible editor, aided by such a large production staff, would have ensured that such a serious error should have been corrected by an erratum slip of appropriate size firmly pasted or otherwise secured in the book. In light of the prevalence of notions about "political correctness" today, a suspicious mind might be left wondering whether someone on the editorial staff had made a deliberate error, and disapproving of Campbell's racial interpretation had sought to ensure that ill-informed readers would be prevented from interpreting what Campbell regarded as an essential set of maps.

A devoted lover of civilization and of human achievement at all levels, Joseph Campbell believed that some civilizations had advanced further than others, and that some races were themselves biologically more advanced than others. It is a living tribute to his talent, wit and charm that he achieved the immense popularity that was his during his life, given his politically "incorrect" views. This biography by two of his former students, who like so many others were captivated by his personal charm and ability to convey to others his enthusiasm for his subject, is a well earned tribute to a very distinguished scholar and an outstanding human being. Campbell did much to help preserve a healthy love of learning, free from contemporary political "isms." It only takes a few Joseph Campbells to keep the love of knowledge-for-knowledge's sake alive in the human breast.

James Johnson
Institute for the Study of Man

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A Field Guide to
Aboriginal Rock Engravings
Peter Stanbury and John Clegg
Sydney University Press
Paperback 164 pages. Illustrated

Australian rock engravings provide a valuable few prehistoric record which helps to illuminate the cultural history of the Australian aborigines. Fortunately, the Australian government has created a register of all known aboriginal rock carvings, evidence of the "dreamtime" of a people who kept no history and know little if anything of their own origins.

Rock carvings seem to have been a way of identifying ritual sites and illustrating ritual law. Some comprise hunting scenes, weapons, and include representations of human forms. Animals are commonly illustrated and are believed to have had totemistic significance.

An echo of Paleolithic practices common to other parts of the world is to be found in finger markings, usually located in caves and imprinted on soft limestone without the aid of tools. More sophisticated are the *panaramittee*, named after a site in the Flinders ranges of South Australia, which comprise shallow incisions in the form of rough circles and lines, some of which have been speculatively regarded as illustrative of animal tracks. The more complex of these, which embrace human and animal forms, are classified as belonging to a "complex figurative style."

The dating of some of the older carvings and "paintings" has been put as far back as five thousand years. A collection of early photographs, taken by Charles Kerry, a European, shows aboriginal initiation rituals in which animals such as wallabys, emu, fish, and snakes have been traced in the sand, obviously with ritual significance. These suggest that the surviving rock engravings may well have been used for similar purposes.

James Johnson
Institute for the Study of Man

Art and Identity in Oceania
Ed. Allan Hanson and Louise Hanson
University of Hawaii Press
Clothbound 316 pages. Illustrated

This is a magnificently presented and well illustrated collection of nineteen articles covering the art of the native peoples of the Pacific.

The emphasis in each paper varies somewhat. Some authors concen-

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trate on the archaeological approach, others adopt a primarily aesthetic viewpoint. However, this does not detract from the value of the collection, even though it means that – as in most collections which are not the work of a single author – there is some lack of cohesion. On the other hand, the collection does not suffer from the danger inherent in any single-author work, namely the necessity of restricting the viewpoint to a single theme as developed by that single author. In short, the very divergence of viewpoints inspiring the nineteen different, but all excellent, studies helps to keep the reader aware of the many-faceted nature of the subject matter. This makes the book a vital and stimulating collection, even if though it was not designed as an encyclopedic survey or comprehensive reference book.

ERRATA

The Mankind Quarterly Vol. 31, No. 3, Spring 1991

Richard Lynn: Race Differences in Intelligence: A Global Perspective. Page 274, Table 7.

Decision times for the South African sample should read 398, 489 and 924, and values for r -93*, -83* and -86*. These figures replace 400, 501, 991 and -94**, -89* and -96**.

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